CURRENT LIABILITIES AS A PERMANENT SOURCE OF FUNDS FOR MANUFACTURING CORPORATIONS

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CHAPTER I

INTRODUCTION: THE TRADITIONAL ROLE OF CURRENT LIABILITIES IN FINANCIAL THEORY AND THE NEED FOR FURTHER STUDIES

1.1 Purpose of the Study

Current liabilities--obligations due creditors within one year--are the only source of borrowed funds available to all businesses without regard to industry, size, or, in many instances, ability to repay. They are the only funds raised through impersonal market mechanisms which are common to all firms. And, despite these unique and important characteristics, they are the last source of funds to be integrated fully into the mainstream of financial thought.

Until recently most financial theorists have chosen to limit their efforts in this regard to describing the separate accounts and analyzing their combined effect on the short-run liquidity of the firm. Current liabilities have not been studied intensively as an alternative means of financing asset requirements permanently, their widespread use for this purpose notwithstanding.

As an alternative source of funds, one which may be substituted for a part of long-term debt or equity or both, continuing use (or disuse) of current-liability financing is pertinent to decisions regarding the firm's long-run financial structure. A realization of this

fact is just beginning to emerge in the literature. However, those few explicit indications that current liabilites have long-term significance appear to lack the conviction and authority they might have acquired from an underlying comprehensive analysis of the nature of current liabilities as a source of funds.

There are several prominent reasons for this state of affairs, none of which explains completely the tendency to neglect the long-term attributes of current liabilities. One is simply that the major financial episodes in a firm's life are so important to success or failure compared with any short period of day-to-day operation. This is true particularly of the rails, utilities, and large industrials which were the focal points of earlier writers. These firms tended to use minimum levels of short-term debt.

Another reason is that the nature of current liabilities may be considered so well known and comparatively unstimulating that they are passed over in favor of more complex financial topics. Perhaps an additional contributing factor is the lack of an adequate empirical study about the behavior and functions of current-liability financing through time.

For these reasons, and undoubtedly others, the literature of finance is incomplete with respect to the nature of current liabilities as a source of funds and internally inconsistent in many of the instances in which the topic is discussed at all. This thesis is a retrenchment--a re-evaluation of assumed truths. Its purpose is to provide the foundation for a better understanding of the role of current-liability financing.

1.2 Contemporary Views about Current-Liability Financing

Lack of a well-developed and consistent body of thought about the long-term attributes of current-liability financing may be demonstrated effectively by a short review of the more relevant portions of the literature of financial theory. The references cited in this section are intended to illustrate rather than exhaust the contemporary position and to stress the presence or absence of a consensus. Inconsistencies in the literature are also stressed, at the risk of appearing to overlook the vast amount of fine work being accomplished in the respective areas.

Some of the more significant contributions will be discussed in greater detail in later chapters when the various topics are revisited in light of the findings of the intervening analysis. For now, the survey will be brief and somewhat compartmentalized so that the task will be manageable.

Guthmann and Dougall, by virtue of their eminence, are so often chosen to epitomize current thought in finance that it shows a distinct lack of imagination to call on them once more. But certainly their attitude toward the relative importance of long-term and short-term sources of funds is characteristic of much of contemporary thought. They say:

> Sound financial planning requires the consideration of the financing problem as a whole. Both the more permanent types of capital supply--stocks, bonds, long-term notes, and retained earnings--and the temporary or short-term sources--such as banks and trade creditors--are studied. The relative importance of these two categories of sources of funds varies among different businesses and changes from time to time for the individual concern. The greater attention given to long-term financing

reflects its greater complexity and public importance and the need for careful long-range planning (15, p. 2).[1]

This tendency to equate long-term considerations with sources of long-term funds, according to Weston (53, p. 265), is a lineal descendent of the views of Bishop (2), Dewing (10), Lyon (27), and Mead (29). All these writers were prone to emphasize the dramatic episodes in a firm's tenure, which involved financing with long-term funds, at the expense of all but minimum consideration of short-term sources of funds.

One cannot say, however, that whatever deficiencies are present in today's literature regarding the long-term attributes of current-liability financing are the result of a universal neglect of the topic in earlier periods. Mead, for example, took pains to indicate the riskiness of short-term debt (29, p. 102). And Dewing was among the first to question the significance of the current ratio (10, p. 704) and the level of net working capital (10, pp. 691-692) as measures of that risk. Dewing contended that earning power, not short-run liquidity, is the basis for obtaining short-term as well as long-term loans. Further, when discussing reorganization he explicitly recognized current liabilities as a major capital liability (10, p. 1453) and stated that to be acceptable, a reorganization plan must provide sufficient long-term financing for working capital to prevent the firm from being overburdened with current liabilities. Nevertheless, the approach of all four of these authors, particularly Lyon (27), tended to by-pass short-term financing.

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[1]Keyed references are used throughout this study. The first number corresponds to the number of the reference cited, as listed in the bibliography. The numbers following the comma, if any, are pages in the cited work. Two or more references in a single set of parentheses are separated by semi-colons.

Other writers tried to fill the gap in greater or lesser degree. Prominent were Jamison (21) and McKinsey and Meech (28). The keynote of the latter, as stated in their preface was:

> It is the purpose of this book to treat the everyday problems of financial administration as they logically arise in the normal operations of a going concern (28, p. iii).

McKinsey and Meech noted that current-liability financing could be permanent and devoted a whole chapter to "Capital from Current Liabilities" (28, pp. 299-321).

As early as 1918 Moulton observed that two-thirds of all commercial bank loans outstanding at that time were used to finance fixed rather than working capital (48, p. 729). Field, in 1938, noted the existence of both permanent current assets and a small amount of permanent current liabilities in most firms' balance sheets (14, p. 174).

As indicated by these isolated examples, there were numerous cues for a thorough-going re-evaluation of the nature of current-liability financing which subsequent writers have tended to disregard. Traditional texts continue to appear, mainly revisions of earlier works, which remain essentially unchanged in this respect. Examples are those by Taylor in 1956 (35), Hunt, Williams and Donaldson in 1961 (18), Husband and Dockeray in 1962 (19), and Guthmann and Dougall in 1962 (15).

In the last few years, however, works have been appearing in greater numbers which attempt to redress the balance of emphasis between short-term and long-term sources of funds. Johnson (22), Weston (38), Wessel (37), Schwartz (33), and Lindsay and Sametz (26) certainly would be among the most prominent of those making an effort to assimilate current-liability financing into those areas of theory traditionally considered

strictly of long-term relevance. Rather than discuss their individual strong and weak points it will facilitate matters to combine their ideas with those of other authors in the following topical survey of contemporary opinion.

There is such general agreement on the appropriate use of current-liability financing that it serves no useful purpose to discuss this point in detail. Current liabilities should be used to finance temporary or seasonal peaks in current-asset requirements. In this way the firm may avoid the cost and/or dilution effects of redundant long-term funds when seasonal or temporary needs for funds are low. In Johnson's terminology (22, p. 141), sources must be "suitable" to uses in the sense that short-term uses should be financed by short-term sources so that the relationship between the ebb and flow of the two will be "harmonious."

Although it is commonly recognized that in many firms the level of current liabilities is large and often exceeds seasonal and temporary current-asset requirements, it is a maxim of financial theory that in the "ideally" financed firm all of the permanent level of current assets will be financed with funds conventionally defined as "long-term." Diagrams, such as those in Weston (38, p. 267) and Johnson (22, p. 142), are a popular means of illustrating this point. Current-liability financing is depicted as following a regular annual cycle which reflects changes in current assets, reaching a seasonal high and then falling to zero or nearly so as business volume declines to its normal seasonal low. The diagrams typically indicate no growth in the amount of funds raised from short-term sources even when the firm's working capital requirements are shown as increasing over time. Presumably the fluctuating margin of current assets is not much affected by growth.

Furthermore, the financing of residual current-asset requirements is apparently the only appropriate function of current liabilities. The single known exception is under circumstances when the terms of needed long-term financing are expected to become more favorable in the near future. Funds may then be raised temporarily from short-term sources provided they are refinanced with long-term debt or equity when the favorable expectations are realized.

Obviously, if current liabilities are used exactly as **prescribed**, there can be no significant continuing level of short-term financing in a firm's financial structure. Many contemporary authors discuss the permanent need for current assets in a going concern, usually in terms of "net working capital," but few explicitly mention any **kind** of permanent level of current liabilities. For those that do, the permanent level of current liabilities is a very small amount of financing which results from normal delays in paying bills. Wessel (37, p. 95), and Donaldson and Pfahl (11, p. 506), are among those few who follow Field's lead in 1938 and at least recognize its existence.

That the consensus regarding the appropriate use of current-liability financing is indeed as outlined above is reinforced by Solomon's position:

> . . . debt-structure should continuously be structured to asset structure i.e., . . . fixed assets and "permanent" working capital should be financed with long-term liabilities and . . . temporary (seasonal or cyclical) working capital needs should be financed by temporary or short-duration sources. The logic of this rule of thumb is evident and needs no explanation (34, p. 147).

One can hardly resist inquiring how this standard for the use of short-term funds accords with actual practice. Although this point is the subject of intensive investigation in later chapters, it is interesting to speculate momentarily about Prather's observation on this subject

> The volume of short-term credit is one of the most striking financial aspects of modern business. Approximately 60 per cent of the total debt of business corporations in the United States has a maturity of one year or less (32, p. 233).

Apparently seasonal and temporary needs for current assets are considerable, or else theory and practice do not coincide very well.

Another point in the consensus is that current liabilities entail a high degree of risk due to their rapid maturities. Guthmann and Dougall state:

> The more cash the business has and the nearer its various assets are to the point of conversion into cash, the greater its liquidity. The greater the liquidity, the smaller is the risk of insolvency. (The speed with which the various assets are moving towards cash realization and debts toward maturity add to the static balance sheet picture.) On the other hand, the greater the proportion of short-term, or current, debt, the greater the near-term demands upon cash and the risk of insolvency. Fixed liabilities run for a longer term and so are "safer." They require only an interest payment each year and, usually, some stipulated fraction of the principal (15, p. 53).

Authors with a less traditional viewpoint agree. Wessel, for example, says:

> To rely on current liabilities for more or less permanent funds is indeed dangerous, since some of the many maturities may occur during periods of financial difficulty. . . . The elements of risk associated with securing funds by long-term borrowing are essentially the same as those encountered with current liabilities. . . . The risk element, however, is less with the fixed liabilities than with the current. This is the case because these commitments cover long periods of time, often running as high as twenty or thirty years, and sometimes even longer (37, p. 291).

Undoubtedly this high degree of risk is the reason why current liabilities ought to be used sparingly, in the manner indicated above. Despite their cheapness--recognized by many as free of avoidable cost--and despite their ready availability--to the point of being characterized as "spontaneous" sources of credit, current liabilities as a whole

should function only as the marginal source of funds in order to minimize risk. This maxim is just as prevalent in the new texts which are said to pertain to all business firms, including small ones without access to the organized capital markets, as it was in the old treatises which were oriented toward the financing of large corporations.

The risks associated with current liabilities will be minimized if they are confined to supplying seasonal or temporary needs because the resulting low level of liabilities will be "self-liquidating." As suggested by the commercial loan theory of bank credit, the processing and sale of goods during the normal course of business will automatically provide the funds with which to repay the short-term liabilities. Therefore, short-run liquidity, primarily in the form of inventory turnover, is of the essence.

In sharp contrast, the costs of long-term sources of funds are met by the earning power of the firm. According to Johnson:

> As we move from short-term financing to intermediate- and long-term financing, we are making a very fundamental shift in the sources from which these funds must be repaid (22, p. 321).

Although not intending to discuss fully at this point the relative risks of long- and short-term debt, it does seem appropriate to ponder the circumstances under which a going concern turns over its current assets while lacking earning power or has earning power without turning over its current assets. "An enterprise operates by turning its circulating capital," in Eiteman's words (36, p. 210). Thus the real dichotomy between turnover and earnings may become blurred in practice.

One might ponder, in addition, why it is considered appropriate and desirable to finance permanent current assets with long-term debt but not with short-term debt. That there is some difference in the

rate of turnover of permanent and temporary current assets which depends on the source from which they were financed is obviously unlikely. Instead, the reason may be that the "spontaneous" short-term credit might not be available when needed.

The consensus, then, is that a firm assumes considerable risk by using current liabilities, despite their "spontaneous" incurrence and "self-liquidating" demise. There is also a consensus about the measurement of the risk of current indebtedness. A firm is likely to avoid financial embarrassment if its current assets are at least double current liabilities. Thus current assets could shrink by half their book value before current creditors were injured, provided no other creditors' claims ranked above or on a par with current creditors. Net working capital, the margin of safety by which current assets exceed short-term debt, is the security behind current-liability financing and its level indicates the amount of risk involved. Although the mortgage or liquidation-value-of-assets type of security has long since been downgraded as the first-line consideration for long-term credit, the notion still prevails as far as current debt is concerned. Husband and Dockeray provide an unusually straightforward illustration of the kind of analysis sometimes associated with this approach:

> From management's point of view, the chief difficulty with the net concept of working capital arises from the fact that it is impossible to increase /net/ working capital through current borrowing (19, p. 520).

In analyses developed more recently, several writers, notably Donaldson (12), contend that the net balance of a firm's cash inflows and outflows is the best measure of its capacity to assume additional cash outflows of any kind. Net cash flow is the principal indication

of the risk involved in short- as well as long-term debt financing. This idea is not new, of course; it is an extension of the traditional cash budget. While Donaldson's cash-flow approach is a big improvement over the net-working-capital concept as a method of risk analysis and measurement, the emphasis so far has been on the firm's capacity to meet the fixed charges of long-term debt. Consequently there is some tendency to net out the funds required for payment of short-term debt against cash inflow on a dollar-for-dollar basis without allowing a margin of safety to cover any risks involved, in accordance with the theory of self-liquidating short-term debt.

Turning now to the aspects of business finance traditionally considered to be of a long-term nature, it is not surprising to find that short-term debt is only beginning to be treated as a continuing source of funds with corresponding long-term implications. Donaldson and Pfahl (11), mentioned above as having recognized the existence of a permanent level of current liabilities, nevertheless exclude them from long-run considerations. Lindsay and Sametz (26), too, stress the importance of current liabilities but omit them from specific discussions of trading on the equity, leverage, cost of capital, and optimum long-run patterns of financing. Bosland (5), who also recognizes permanent current liabilities, excludes them as a means of trading on the equity. Guthmann and Dougall (15, pp. 167-169) treat the topics of trading on the equity and leverage solely in terms of capital structure. But in the chapter dealing expressly with current liabilities they note that use of short-term debt is trading on the equity in that it allows firms to expand beyond the owners' limited means (15, p. 438).

Hunt, Williams, and Donaldson (18, pp. 316-319) also exclude current liabilities from their discussion of trading on the equity and leverage as does Bogen (4, p. 461). Prather suggests that the burden of debt is measured by the ratio of total debt to net worth (32, pp. 138 ff.). He defines trading on the equity in terms of this ratio and includes current liabilities as leverage factors (32, p. 216). But in the chapter summary he redefines trading on the equity as the use of bonds and preferred stocks (32, p. 141).

Howard and Upton have a separate section entitled "The Place of Short-Term Financing in the 'Trading on Equity' Concept" (17, p. 308). In it they state that current liabilities are usually omitted from formal calculations of the degree of trading on the equity and leverage because (1) variation in the amount of short-term debt used by firms is large, (2) the cost is usually unknown, and (3) large businesses typically don't use much short-term credit. Hoagland discussed all borrowing, short- and long-term, in the same chapter but then suggested that firms don't borrow in order to take advantage of gains from trading on the equity in actual practice (16, pp. 170-171). He discussed the concept solely in terms of bonded debt.

The most usual approach to the topic is to state that trading on the equity and leverage result from the use of borrowed funds and preferred stocks while illustrating the discussion with capital-structure accounts only. Although full recognition of current-liability items as trading-on-the-equity and leverage factors is becoming increasingly less rare, there is no consensus in this area yet.

There is even less of a consensus regarding the treatment of current-liability financing in some of the newer topics of financial

literature. When discussing a firm's overall cost of capital, for example, interest bearing short-term debt is often the only current-liability item included. On the other hand, neither Modigliani and Miller (47) nor Guthmann and Dougall include any current liabilities as factors affecting the overall cost of capital while Wessel includes them all. Hunt, Williams and Donaldson, Johnson, and Weston are among those writers who single out interest-bearing short-term debt as "capital," and omit the reason for distinguishing between these and other current liabilities. Another interesting tack is illustrated by Bierman and Smidt who give their readers a choice of ways to handle current liabilities when calculating the cost of capital (1, pp. 137-138).

As a concluding observation in this resume of the literature, the theory of optimal financial structure of the firm is also a rapidly developing topic but there seems to be less doubt about the proper treatment of current liabilities. Schwartz certainly emphasizes heavily the importance of current-liability financing (33). So do Solomon (34) and Wessel (37). However, as noted above, both Solomon and Wessel explicitly subscribe to the view that current liabilities should be used only seasonally or temporarily, and Solomon tends to pass over current liabilities when discussing cost of capital or other "long-term" matters.

1.3 The Need for Additional Studies and the Hypothesis to Be Tested

The preceding discussion of the literature as it pertains to the use of short-term funds needs no summary in view of its brevity. In order to give a sense of direction to the ensuing discussion, however, it is appropriate to suggest that a well-developed body of thought

about the nature of current-liability financing would provide consistent answers to questions such as these.

1. What is the precise nature of the alleged fundamental difference between the sources of cash for repayment of short-term debt and those for long-term debt?

2. What is the relative degree of risk assumed by a firm using short-term debt compared with the risk of long-term debt?

3. How should the risk of current-liability financing be measured? Are the concepts of net working capital, standard ratio analyses, and the traditional cash budget adequate for this purpose?

4. On what basis is the risk of short-term debt considered so great that long-term debt is a preferable means of financing all current assets required permanently?

5. Why should all, none, or a selected kind of current-liability financing be included in theories of trading on the equity, leverage, cost of capital, and optimal long-run patterns of financing?

6. What is the logic of recognizing the dependence of small firms on trade credit and other non-interest bearing current liabilities while excluding them from many of the major points of financial theory which are intended to apply to all business firms?

7. Does current-liability financing have important long-run attributes resulting purely from its continuous availability as an alternative source of funds?

Lack of convincing answers to these seven questions is a sufficient indication that there is considerable room for improvement in contemporary theories of current-liability financing. Although it would be impracticable to try to solve them exhaustively in one study, the concluding chapters will at least indicate some of the fundamental considerations on which satisfactory answers should be based.

As a first step in this direction it would be useful to examine in detail the historical behavior of the use of short-term debt by business firms. Not all theoretical deficiencies can be resolved

through study of the empirical data since the way firms have behaved and the way they should have behaved may differ substantially. But an adequate empirical study might have helped avoid some of them and is certainly prerequisite to further theoretical discussion.

Numerous studies have been made, of course, but apparently none has concentrated on current-liability financing in a way that illuminates very well its role in the business world. One or more of the following five important defects are present to some extent in all studies of the use of short-term debt known to be available.

1. The seasonal nature of short-term debt is lost through the use of annual data.

2. Aggregates of very large firms are studied with the inevitable result that current-liability financing is minimal.

3. The number of years studied is too short to be meaningful.

4. A sources-and-uses-of-funds type of analysis may understate the importance of current-liability financing by an amount as large as the sum of all its intra-period renewals.

5. Conclusions about the behavior of individual firms are based solely on aggregate data which smooth out seasonal and temporary needs for funds and obscure the degree of variation among firms in the utilization of short-term debt.

Several of the better known empirical investigations are noted here in terms of their more or less debilitating limitations. The classical study by Chudson (7) concentrates on a single year, 1937, with some comparative data from other years, reviewed individually. Koch limited his analysis to 84 of the corporate giants (23). Merwin, who studied small manufacturing firms, uses annual-balance-sheet data which tend to be static but which does effectively make the point that short-term debt is an important and continuing source of funds for smaller firms (30).

A relatively long period, 1914-1940, is analyzed by Jacoby and Saulnier but they don't investigate current-liability financing as such (20). Nor does Kuznets in either of his eminent studies on capital formation (24) or seasonal variations in industry (25). The section of Kuznets' book on capital formation which is most relevant in the context of this thesis was based almost entirely on an earlier study by Creamer and associates (8). It suffers from most of the defects listed above although it, too, is an exceptionally competent analysis for the purposes intended.

In addition to these books, the empirical data are examined periodically in short articles such as those found in the Survey of Current Business and the Federal Reserve Bulletin. They tend to be oriented heavily toward the use of bank credit in terms of changes in the amount outstanding over a given time period. As an example, McHugh and Ciaccio studied the demand for external capital by small and medium sized firms. They included only bank credit among the current liabilities with the debatable observation that "Banks are by far the most important regular source of outside financing available to smaller sized business" (46, p. 20).

As a final and concrete illustration of one kind of available data it will be useful to look at the empirical evidence used by Johnson in conjunction with his ideas about current-liability financing. On page 360 of the text cited above he presents data covering the interval from 1953 through 1960. His source was The Investment Outlook for 1961, compiled from a variety of sources and published by the Bankers Trust Company. In this period, 40% of the funds raised externally by business firms, $46.1 billion out of $115.3 billion, was

from current-liability sources. Long-term debt provided $52.1 billion in the same period. The individual short-term sources accounted for the following amounts of funds:

Notes and accounts payable	$27.5 billion
Short-term bank loans	6.7
Federal income tax liabilities	(4.0)
Other liabilities	15.9
Total	$46.1 billion

Figures such as these are typical of much of the empirical evidence supporting contemporary theories of current-liability financing. Unfortunately they don't illuminate very brilliantly either the quantitative aspects of short-term debt or more basic issues of the kind just outlined. The above table may prompt one to ask:

1. Is the negative figure of $4.0 billion for tax liabilities a true indication of the amount of funds provided by normal delays in paying taxes?

2. Is bank credit really the "most important regular source" of outside financing for smaller firms as maintained by McHugh and Ciaccio?

3. What would have been the amount of current-liability financing if all renewals of short-term debt had been included? Is the $41.6 billion of short-term debt comparable conceptually with the $52.1 billion of long-term debt mentioned above?

4. Is the seasonality of business as great as might be implied by this amount of short-term financing or do firms tend to finance more than just seasonal and temporary needs with current liabilities?

An attempt will be made in subsequent chapters to lay a foundation for answering questions such as these and the following ones as well.

5. What is the comparative behavior of short-term and long-term funds through time?

6. What function does short-term financing perform compared with long-term sources of funds?

7. Are these functions exclusively the domain of short-term financing or do long-term sources sometimes play the same role?

8. What is the degree of magnitude of the fluctuating margins of current assets and liabilities?

9. What part does current-liability financing play in the growth of a firm?

10. Are there substantial differences in the behavior of the different current-liability accounts?

11. Is there empirical evidence of a permanent level of current liabilities and, if so, how big is it?

It was concluded earlier that there is a definite need for additional studies in the theory of current-liability financing. A concomitant need for additional empirical analysis also appears self-evident.

The central part of this thesis is an empirical study designed to determine the role of current liability financing in practice and, specifically, to test the following hypothesis:

> Current liabilities are a significant source of funds for many manufacturing firms on a continuing basis. Although the individual liabilities are repaid or refunded in one year or less and their total amount fluctuates, there is nevertheless a permanent level of current liabilities which provides substantial amounts of funds to these firms over extended periods of time. If this hypothesis is true, the permanent level of current liabilities must be measured and the functions of current liabilities reevaluated, taking its size into consideration.

Obviously it is unlikely that empirical data will do more than point the way toward resolution of the theoretical deficiencies noted and implied above. The last three chapters of this thesis provide a basis for the integration of the empirical evidence with the role of short-term debt in theory.

1.4 Scope and Plan of the Study

Several firmly embedded principles of financial theory are challenged in this study along lines already indicated. It is offered as a frontal attack on the traditional viewpoint which holds that current-liability financing may be ignored or else considered a "given" or "known" factor when analyzing the long-run position of the firm. The scope and plan of the material are outlined by the section headings listed at the beginning of each chapter and in the Table of Contents. However, the following concise statement of the larger purpose of each chapter may indicate better the general direction in which the study is headed.

The quantitative nature of current liabilities is analyzed in Chapters II - IV. Chapter II contains an explicit statement of the reasons for choosing the particular array of data used in this study and includes some informal indications of their suitability for the purposes intended. The data used are summarized in Section 2.6.

Traditional attitudes toward current-liability financing were formed at least partially from impressions as to their amounts, variability, and functions compared with those of other sources of funds. Chapter III is an empirical test of the quantitative characteristics of current liabilities on a comparative basis. The objective is to ascertain whether there is empirical justification for the sharp traditional dichotomy between short- and long-term sources of funds. Section 3.6 is a summary of the principal results of the comparison.

The traditional attitude toward current liabilities is also the result of impressions or assumptions about their individual and collective quantitative characteristics apart from those of other

sources of funds. Specifically, the amounts of current-liability financing used by business firms are assumed to vary from seasonal or temporary highs to lows at or near zero when business operates at minimum or basic levels. The analysis in Chapter IV is a test of this assumption and the related implication that amounts of current liabilities used continuously are too small to be of quantitative significance. The results are summarized in Section 4.6.

The statistical analysis supports the hypothesis of this study by demonstrating that manufacturing corporations finance substantial amounts of assets required permanently with funds obtained from current-liability sources. At the same time, no quantitative reasons were discovered for assuming that the continuing use of current liabilities lacks long-run significance. Chapters V - VII are devoted to an examination of the implications of these findings.

In Chapter V, the theoretical properties of "permanent current liabilities," the amounts used when the firm operates at basic or minimum levels, are developed in terms of differences and similarities with respect to those of "temporary current liabilities" and long-term debt. It is found that permanent current liabilities often may be considered a form of long-term debt.

Thus, both the empirical and the theoretical results of the study indicate the need for a thorough-going re-evaluation of the role of current liabilities in financial theory. A complete analysis deserves more attention than it is feasible to give within a single study. However, the major areas in which additional studies are needed and the basic issues to be considered are clear. The role of current liabilities in traditional, or "old-line," financial theory is investigated in

Chapter VI and the capital-budgeting approach, or long-run model, is examined in Chapter VII. When the treatment accorded current liabilities appears to be inadequate, in view of the results of the study, alternative approaches are suggested. Both chapters are presented in a topical format and without summaries since each topic is itself a form of summary.

CHAPTER II

DATA SELECTION

2.1 Purpose and Plan of This Chapter

The core of this study is an empirical analysis of the quantity, variation, and functions of the current-liability financing used by manufacturing firms. Its principal objective is to determine the quantitative characteristics of current liabilities as an alternative source of funds in a way that will contribute to future discussions of the financial theory of the firm.

Whether or not this objective is realized depends to a great extent on competent application of statistical technique and skilled interpretation of results. But in a study such as this, which is intended to display the characteristics of short-term debt more meaningfully than do previous studies, any disposition toward ultimate success or failure begins at an earlier stage.

All but one of the limitations in other studies, listed on page 15, were imposed by deficiencies in the coverage or periodicity of the data or in the time period analyzed. Hence it is especially apropos that the gains from this study be evaluated starting with the process of data

selection. The purpose of this chapter is to show what data are used, how they were selected, and why they were selected, in detail sufficient to allow the reader himself to assess their value.

Although it is convenient to conduct the discussion under several headings, the processes of data selection are interdependent and cannot be separated completely. As the prime example, selecting a time period involves consideration of: (1) suitability of the period from a technical viewpoint; (2) availability of usable data; and (3) variability of economic conditions. A more smooth exposition results from including all these points in Section 2.5, "The Time Period," than would be the case if they were dispersed throughout the intervening sections in which they have obvious relevance.

2.2 Aggregates of Manufacturing Corporations

The large volume of regularly published financial data includes a challenging array of sectors to investigate which increases correspondingly the analyst's problems of choice. It is impracticable to study in one thesis all the kinds of business firms for which data on current-liability financing are available; undoubtedly returns would begin to diminish severely long before completion of the analysis. Even in a study which is expected to yield results with more or less general applicability, the analyst is encouraged by the abundance of raw material to select illustrative rather than comprehensive data covering both the sector or sectors to be analyzed and their component parts.

Manufacturing corporations as a group use more current-liability financing in relation to asset requirements than the utilities or transportation industries and less than the average of trade corporations. They provide a wide range of experience; their importance as subjects

of investigation in the field of finance is indisputable; and generalizations probably will be more convincing than they would be if a sector with more specialized business activity were chosen.

TABLE 1--CURRENT LIABILITIES AS A PERCENTAGE OF TOTAL ASSETS IN VARIOUS BUSINESS SECTORS FOR THE YEAR ENDED JUNE 30, 1961

Sector	Percentage
Construction	42.7
Wholesale Trade	39.2
Retail Trade	31.0
Manufacturing	19.5
Mining	16.0
Transportation	12.4
Communication	10.5
Electric and Gas Utilities	8.3

Source: Treasury Department, Internal Revenue Service. Statistics of Income, 1960-61, United States Business Tax Returns, pp. 105-109.

A conservative bias is introduced into the study by limiting the firms to corporations instead of including unincorporated businesses. Smaller firms, with limited access to the organized capital markets, tend to use more current-liability financing than larger firms (Table 4). To the extent that the unincorporated firms in the manufacturing sector are the smaller ones, this study will underestimate the quantitative importance of current-liability financing. This bias is not as important as it would be in the retail or service sectors where the proportion of unincorporated businesses is higher but it is probably more substantial than if the utility, communication, or transportation industries were analyzed.

The source of data for aggregates of manufacturing firms is the Quarterly Financial Report for Manufacturing Corporations (39). In this report the Federal Trade Commission and the Securities and Exchange

Commission have published quarterly since 1947 estimated composite balance sheets and income statements for groups of manufacturing corporations which, in total, represent the entire population of such firms except for newspapers.

All things considered, the data in these reports may be better suited to the purposes of this thesis than the kinds of data analyzed in some previous studies of current-liability financing. Important potential improvements over past studies--not all of which apply to any one of them--are listed immediately below.

1. The data are available for almost all of the years after World War II.

2. Quarterly data help reveal seasonal variations.

3. The data are in the form of conventional balance sheets and income statements, which facilitate both comparison with the financial reports of individual firms and interpretation in the framework of standard financial analysis.

4. The financial statements of the firms canvassed are revised when necessary to conform to a uniform set of standard accounting principles.

5. As of the first quarter of 1962, the choice of industry sectors included 20 major industries, nine industry sub-groups, plus total figures for all manufacturing corporations, all durables industries, and all nondurables industries.

6. As of the same quarter the data also included separate financial statements for each of nine categories of firms grouped by amount of total assets.

7. The financial statements include 39 individual accounts, which permit detailed analysis.

Estimated balance sheets and income statements are prepared from a weighted probability sample of all enterprises classed as manufacturers, except newspapers, which are required to file U. S. Corporation Tax Form 1120. The sample is brought up to date periodically by (1) sampling

applicants for a Federal Social Security Employer's Identification Number and (2) replacing one-eighth of the FTC segment of the sample each quarter. In this way the sample allows for corporate births, deaths, acquisitions, mergers, and the like. Multiple counting of subsidiary firms is avoided by the use of consolidated financial statements.

The current sampling method is described by the SEC and the FTC as one of "optimum allocation," i.e., the method which provides the "greatest statistical precision obtainable with a given amount of funds." In terms of numbers of firms the sample includes approximately 6.6% of the composite frame but these 10,000 or more firms account for about 88% of the total assets of manufacturing corporations. All manufacturing corporations with assets of $5 million are included plus approximately 37% of those with assets of from $1 to $5 million and about 2½% of those with assets of less than $1 million. The SEC is responsible for obtaining data from all firms filing annual reports with it and the FTC is responsible for obtaining data from all other firms in the sample.

In terms of statistical precision, the sample is designed so that one standard deviation of the estimate for the account "net-profit-before-federal-income-taxes" for most of the industries is less than 5% of that estimate. However, each of the more-than-2,000 estimated aggregates has its own sampling error.

This brief description of the data was based on the first-quarter-1962 issue of the Report (39). Coverage of industries, size groups, and accounts, and sampling methods has evolved since 1947 with the result that there are some discontinuities in the data. The nature and importance of these discontinuities are discussed in Section 2.5, "The Time Period."

The dollar limits of the asset-size categories have been changed from time to time since 1947. However, by combining them appropriately, a consistent set of six asset-size categories can be derived which, in total, include all manufacturing corporations. They are listed in Table 2, page 29.

Selection of industries to be analyzed is not so straight forward a process. It is not worthwhile to analyze all 29 industry groups provided that a rational basis for narrowing the field is used. However, all groups except manufacturers of aircraft and parts were candidates. The aircraft industry as a whole raises half or more of its total financing from advances and pre-payments of the U. S. government, a current liability account. Inclusion of this special industry would serve little purpose in a general study such as this.

The main criteria for selecting industries were diversity of (1) quantity of current-liability financing utilized; (2) patterns of variation in that quantity; and (3) basic economic characteristics. The first two characteristics were measured for purposes of industry selection in terms of (a) the average ratio of current liabilities to total assets (henceforth called the CL/TA ratio) from the first quarter of 1953 through the fourth quarter of 1962 and (b) the range of the quarterly values of this ratio.

All 29 industry groups were ranked from highest to lowest in two arrays according to these two measures. Those industries with average CL/TA ratios which ranked above the average for all manufacturing corporations were labeled "high utilization" industries and those with lower ratios were called "low utilization" industries. Industries in which the range of the quarterly CL/TA ratios ranked above the range

for the average of all manufacturing corporations were designated "high-variability" industries and those below were called "low variablitity" industries. Thus all 29 industries tended to fall in one of four categories: (1) high utilization-high variability; (2) high utilization-low variability; (3) low utilization-high variability; and (4) low utilization-low variability.

Industries with high average CL/TA ratios tended to have high ranges of the quarterly ratios and those with low average ratios generally had low ranges. Consequently the number of candidates for the first and last classifications exceeded that for the middle two. Additional criteria used in the final selection of industries were (1) the pattern of variation in the quarterly CL/TA ratios as indicated graphically and (2) diversity of economic characteristics. Preference was given to industries with analytically interesting rather than ordinary patterns of current-liability financing. Among the more interesting are those subject to relatively large cyclical swings, marked seasonal variations, or unusual stability of the ratio through time. As for other economic characteristics, selections were made so as to equalize in so far as practicable the number of durable goods and nondurable goods industries while avoiding inclusion of both a major industry and its dominant sub-group or of two major industries with very similar economic characteristics.

Using the above basis for selection, 16 industries were chosen for intensive analysis, including four in each of the four "high/low" classifications above. Together they account for over four-fifths of the assets of all manufacturing corporations (Table 2).

TABLE 2--THE TWENTY-FIVE GROUPS OF AGGREGATE DATA ANALYZED IN THIS STUDY AND THE TOTAL ASSETS IN EACH AS OF DECEMBER 31, 1962

Industry or Size Group	Millions of Dollars of Total Assets
Durable Goods Industries	$145,672
Nondurable Goods Industries	141,414
All Manufacturing Corporations	$287,086
High Utilization-High Variability	
Apparel	$ 4,891
Electrical Machinery	21,521
Furniture	2,399
Motor Vehicles	22,286
High Utilization-Low Variability	
Food	25,858
Other Metal Products	12,276
Printing	6,130
Rubber	6,293
Low Utilization-High Variability	
Lumber	4,790
Primary Metals	30,217
Textiles	8,824
Tobacco	3,698
Low Utilization-Low Variability	
Chemicals	27,111
Paper	11,684
Petroleum Refining	44,286
Stone, Clay, Glass	9,486
Total	$241,750*
Asset-Size Groups	
Under $1 Million	$ 21,276
$1 - $5 Million	21,612
$5 - $10 Million	10,725
$10 - $50 Million	30,335
$50 - $100 Million	20,002
Over $100 Million	183,137
Total	$287,087*

*These totals represent 84% and 100%, respectively, of the assets of all manufacturing corporations, except newspapers, as of December 31, 1962.

Note: Detail may not add to totals due to rounding.

Source: See Section 2.2 for source and explanation of data.

Subsequent analysis has shown that these 16 industries do indeed span the range of experience in the manufacturing sector but that each of the "high/low" classifications contains industries as different in some respects as they are alike in others. The four classifications are discarded as useful organizational headings in later chapters.

2.3 Individual Manufacturing Corporations

The aggregates of data just discussed are considered an excellent source of information about the average experience of large groups of manufacturing firms. As is true of most aggregates, however, the behavior of individual components is submerged. Their separate experiences tend to offset or reinforce one another with the result that aggregated data may or may not convey an accurate picture of what is happening within an industry.

Whether or not this limitation is important depends on the purpose for which the data are used. Since the present study is intended to have implications for the financial managers of individual firms, some notion of the distribution of individual firms around industry norms should be included.

A more critical need for analysis of single firms occurs in connection with the measurement of whatever permanent levels of current-liability financing are revealed by the study. Certainly when all manufacturing corporations are contained in only twenty industry categories, there is considerable danger that offsetting movements within the group smooth the data over time in even the more homogeneous industries. Any such regularity of average experience resulting from the cancelling effects of intra-industry variations would bias the measurement of permanent current liabilities in favor of the hypothesis of this thesis.

To reduce the danger of this possibility, an array of individual firms is analyzed along with the aggregate data. Analysis of these individual firms will also indicate how they differ from the aggregates in other respects pertinent to the study.

Unfortunately, published quarterly financial reports spanning five to fifteen years for large numbers of individual firms are scarce. The only known source of suitable data is the firms themselves. Given the resources available for this project, the best method of obtaining the required information appeared to be a mail survey of five hundred manufacturing corporations.

With so small a mailing list it was also evident that the data would have to come from carefully selected groups of firms if they were to provide meaningful insights. Basically the problem was to canvass enough firms in one industry to assure the likelihood of a response sufficiently large to provide useful information about that industry and, still within the confines of a 500-firm limit, to survey enough industries to gain some knowledge of the dispersion of experience of manufacturing firms in general.

Having these objectives in mind, the sample was stratified on the basis of the four "high/low" categories of utilization and variablity of current-liability financing discussed in Section 2.2 and listed in Table 2. It was hoped that letters mailed to 125 firms in one industry in each of the four classifications would generate data of sufficient depth and breadth to contribute to the results of this study. The four industries were chosen with due regard to diversity of economic characteristics. They are listed in Table 3, at the end of this section.

Ideally the firms surveyed would be representative of all those covered by the aggregate data for their respective industries. Since no complete list of these firms is available, the 125 corporations in each industry were selected from the July, 1962 Directory of Companies Filing Annual Reports with the Securities and Exchange Commission Under the Securities Exchange Act of 1934 (41).

Each firm in each group in the Directory (41) comprising the four respective industries was assigned a four-digit code number. Series of four-digit numbers were recorded in order from a table of random numbers, after starting at a randomly selected point in the table, until 125 code numbers were listed for each industry.

A letter and an accompanying data table such as these reproduced on the next two pages were sent to each of the 500 companies. They were asked to submit account balances from their quarterly consolidated balance sheets for current assets, total assets, current liabilities, and net worth. Total liabilities and the sum of debts due in over one year can be calculated from the four accounts requested. These six accounts are sufficient to permit the application of the bulk of the analysis of the aggregates to the individual firms. To have requested the amount of data required for a complete duplication of the analysis of the aggregates undoubtedly would have lowered the response to the survey considerably. Several measures of survey response are listed in Table 3, following.

Aside from its extremely small size, this sample of firms is less than ideal because: (1) the characteristics of the group of corporations which would choose to respond to the request for data could differ substantially from the group which would choose to not respond (response/

UNIVERSITY OF FLORIDA
Gainesville, 32603

College of Business Administration
Department of Finance and Insurance

October 30, 1963

For what purposes have firms in your industry used current-liability financing in recent years? If your experience parallels that of many of your colleagues, you will be well aware that current liabilities provide continuous amounts of funds in addition to the amounts needed to meet temporary or seasonal business peaks.

Unfortunately, we in the schools of business have tended to regard current liabilities only as a source of temporary funds while neglecting the job they do on a continuous basis. You could help us realign our thinking in this area, and thus improve our training of potential financial managers, by sending us a small but critical amount of data from your quarterly consolidated balance sheets. The attached table is self-explanatory and has room for everything we need. It requires only a little clerical time to complete.

Naturally this information will be held in strictest confidence and no participating firm will be identified in any way.

The Ford Foundation is financing our investigation through its doctoral fellowship program. We are convinced that the practical implications of this study make it worthy of your support, too. We will be glad to send you a summary of our findings if you indicate your interest in the last box on the post card.

May we count on you to return the post card and then route the table to a member of your staff for completion? Thank you very much for your help.

Sincerely,

Alvin B. Biscoe, Jr.
Instructor of Finance

Attachments
ABB:at

FIGURE 1--FACSIMILE OF LETTER REQUESTING DATA MAILED TO 500 SAMPLE FIRMS

October 21, 1963

Please write in the table below the total dollar amounts for each of the four accounts as shown in your quarterly consolidated balance sheets. The years and quarters are on a calendar basis with quarters ending on March 31, June 30, September 30, and December 31. Please enter your account balances opposite the calendar years and quarters closest to the dates of your quarterly balance sheets.

If your firm has been organized during the period, please start with the first available balance sheet.

If your firm has merged or consolidated during the period, please give figures for the larger firm for quarters prior to the merger or consolidation and for the combined firms thereafter.

We would welcome your comments on the back of this sheet.

Please return to: A. B. Biscoe, Jr., Room 204 Matherly Hall, The University of Florida, Gainesville, Florida.

(thousands of dollars)

Year	Qtr.	Current Assets	Total Assets	Current Liabilities	Net Worth	Year	Qtr.	Current Assets	Total Assets	Current Liabilities	Net Worth
1	1					1	1				
9	2					9	2				
5	3					5	3				
2	4					8	4				
1	1					1	1				
9	2					9	2				
5	3					5	3				
3	4					9	4				
		------ 1954-55 and 1960-61 omitted in this facsimile ------									
1	1					1	1				
9	2					9	2				
5	3					6	3				
6	4					2	4				
1	1					1	1				
9	2					9	2				
5	3					6	3				
7	4					3	4				

FIGURE 2--FACSIMILE OF DATA TABLE
MAILED TO 500 SAMPLE FIRMS

TABLE 3--RESPONSE AND COVERAGE OF THE MAIL SURVEY OF INDIVIDUAL FIRMS

	Electrical Machinery	Food	Primary Metals	Chemicals	Total
Number of letters mailed	125	125	125	125	500
Total replies received	40	34	38	53	165
Usable replies received[a]	30	23	30	35	118
Complete replies received[b]	15	14	21	21	71
Usable replies as percentage letters mailed	24.0%	18.4%	24.0%	28.0%	23.6%
Complete replies as percentage letters mailed	12.0%	11.2%	16.8%	16.8%	14.2%
Total assets in usable replies as of December 31, 1962[c]	$2,385	$2,379	$6,902	$5,587	$17,253[e]
Total assets in usable replies as percentage total assets of corporations in respective industries as of December 31, 1962[d]	11.1%	9.2%	22.8%	20.6%	16.5%

[a]Usable replies are those containing data for at least the nine consecutive quarters starting with the first quarter of 1961. Replies received after January 1, 1964 were too late to be processed regardless of data content.

[b]Complete replies are those containing 45 consecutive quarters of data beginning with the first quarter of 1952.

[c]Total assets are stated in millions of dollars.

[d]Total assets in the industries are listed in Table 2.

[e]These assets represent 6.0% of all those in manufacturing corporations, except newspapers, on December 31, 1962. The number of firms in the sample is less than 1/10 of 1% of all manufacturing corporations, except newspapers.

Source: See Section 2.3 for sources and explanation of data.

nonresponse bias); and (2) the corporations canvassed were all listed with the SEC. That all firms surveyed were listed as of July, 1962 is considered a conservative rather than a debilitating influence on the value of the results of the analysis. Whether or not this view is appropriate depends on how one evaluates the proposition that listed firms, by virtue of their better access to the organized capital markets, have the opportunity to rely more on long- and less on short-term funds than unlisted firms: in consequence, data from the financial statements of listed firms will be more likely to understate than overstate the use of current liabilities by firms in general.

2.4 Evaluation and Uses of the Sample

This section contains: (1) an informal means of evaluating the sample itself; (2) an outline of the uses of the sample data; and (3) a description of the method used to select 20 of the sample firms for intensive analysis.

Response to the survey was good considering that each firm was asked to find in its historical records and enter in a table such as that reproduced in Figure 2 as many as 184 separate pieces of quarterly data spanning an eleven-and-one-half year period. Although small, the selection of firms appears to be broad enough to serve its intended purpose of supplementing the results of the industry analysis with some indication of the behavior of individual firms. On the other hand, the sampling method and the extremely small proportion of firms represented in the sample make obvious the unprofitability of engaging in advanced statistical inference. This is true with respect to both assessing the quality of the sample data and using them for further analysis.

It is desirable to evaluate the sample in terms of the main theme of this entire study--the use of current-liability financing. The stronger the family resemblances between sample and aggregate data in this respect, the more confidently one can rely on the sample to furnish useful insights about individual firms in general. A logical means for illustrating the similarities between the sample and the aggregate data is by comparing the graphs of the quarterly ratios of current liabilities to total assets plotted for each over a period of time.

Figure 3, page 40, contains three sets of these ratios for each sample industry. The solid line represents the FTC-SEC data and expresses total current liabilities as a percentage of total assets. The broken line depicts sample data and is calculated on the same basis. The dotted line also represents sample data but it is calculated as the average of the CL/TA ratios of the individual firms submitting usable data for the given quarter. Thus the dotted line is based on unweighted data--an important property which eliminates the potentially overwhelming effects of large firms in small samples.

In general it is apparent that the three sets of CL/TA ratios follow related patterns in all four industries. It should also be noted that in many instances the FTC-SEC ratios fall between the two sample ratios. This is interpreted as an informal indication of representativeness of the sample inasmuch as the difference between ratios based on FTC-SEC data and sample data is rather consistently small enough to be overshadowed by the difference between weighted and unweighted sample data. The graphs would seem to indicate that the firms whose data comprise the aggregate and sample ratios are oftentimes subjected to common influences and tend to react to them in similar ways when viewed in groups.

The Electrical Machinery industry was selected for sampling because use of current liabilities is comparatively high and variable, especially with regard to cyclical variation. Cyclical patterns in the sample data parallel those in the aggregate data with entirely acceptable regularity. Food firms, too, use relatively high levels of current liabilities but variation is much more seasonal than cyclical. This seasonal variation may come from the commodity market activity of the larger firms since the weighted sample average reflects seasonal variations much more faithfully than the unweighted data.

Primary Metals was chosen for sampling because of the more moderate and somewhat more stable use of current-liability financing by that industry. There are few turning points in the aggregate data not mirrored by the sample. The same conclusion applies to the Chemicals industry in which the level of current liabilities is comparatively low and stable.

All in all, the graphs lend confidence to the opinion, recognized as such, that the sample data in all likelihood will yield useful indications of some of the kinds of behavior to be found in individual firms in general. This view is further supported in Chapter IV, Section 4.3, where all twelve of the above ratios are analyzed quantitatively in terms of their secular, seasonal, and cyclical plus irregular variations. Strong family resemblances between the aggregate and related sample data will be found there, too.

These opinions about the acceptability of the sample are valid only if its limitations are recognized in the specific ways it is used. In Section 3.2 of Chapter III, all of the sample data are used to create a general impression of the dispersion of the behavior of

individual firms. For each quarter in each industry, the distribution of all firms in the sample for that quarter is plotted around the sample mean in terms of the mean plus and minus one standard deviation. The use of standard deviation as the statistic is not to be interpreted as implying any degree of analytic sophistication over and above the use of a clear measure of dispersion. The results are plotted in Figures 3 - 7, pages 40, 52-55.

A more specific notion of the behavior of individual firms is available from a quantitative analysis of several of them which parallels most of the analysis of the aggregate data. Twenty are included in this study. Their quarterly CL/TA ratios are also plotted in Figures 3 - 7 as a preview of the wide variety of experience included in this small number of cases.

Most of the benefits of studying single firms would be realized long before even the 118 in the sample were investigated completely. Brief comments on how the 20 individual firms were selected conclude this section.

The average CL/TA ratio was calculated for each of the 71 firms submitting data for 45 consecutive quarters starting in the first quarter of 1952. These ratios were arranged in descending order for each industry. Five firms were selected from each of the four arrays, including the two extremes, the median, and the first and third quartile firms.

Choosing the firms in this manner assures broad coverage as far as average use of current liabilities is concerned. It seems reasonable to expect that variety of behavior over time would also be a characteristic of this sub sample, as indeed it was shown to be in the subsequent

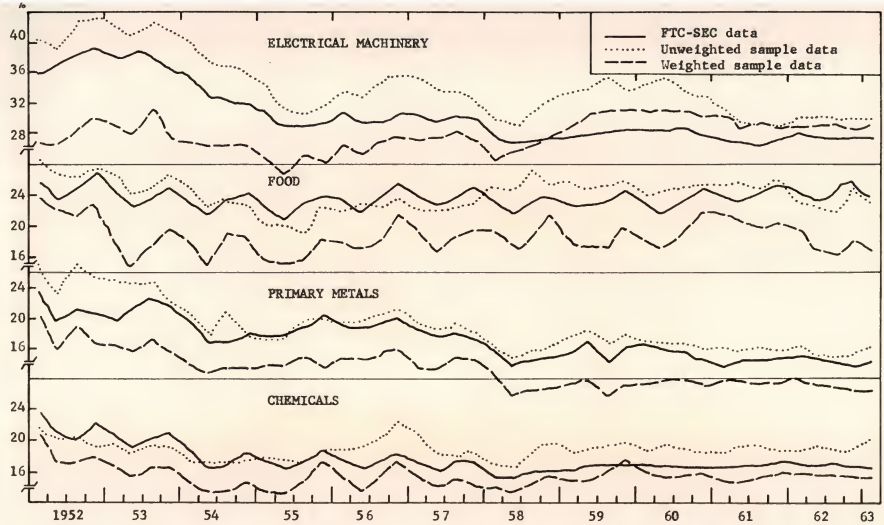

FIGURE 3--QUARTERLY CL/TA RATIOS IN THE SAMPLE INDUSTRIES, 1952 - 1963

See Section 2.4 for explanatory notes and source of data.

analysis. The results of the analysis of these 20 firms are included in the sections dealing with the aggregate data.

2.5 The Time Period

Selection of a time period involves three related sets of criteria, namely: (1) technical suitability; (2) availability of data; and (3) prevailing economic circumstances.

"Technical suitability" means that the time period should be long enough to permit valid estimates of seasonal and cyclical variations and the historical trend; should start and end at similar points in the business cycle; and should start and end at the same time of year when seasonality is important. These three considerations are included as needed in the following comments on data availability and economic conditions, topics which are treated separately for discussion purposes.

As explained in Section 2.2, the Quarterly Financial Report for Manufacturing Corporations (39) is an excellent source of data which covers the entire period from the beginning of 1947 to the present by quarters. During this period, however, the sample of firms from which the estimated financial statements were prepared was changed three times, the methods of classifying firms by industry was revised once, and the number of accounts included in the reports was expanded once. Therefore the choice of time period is affected somewhat by possible discontinuities in the data.

The most recent significant source of discontinuities was occasioned by the 1957 revision of the Bureau of the Budget's Standard Industrial Classification Manual (13). Through 1957 all firms had been classified according to the 1945 version of the SIC. Starting in

1958, the 1957 edition was used. Financial statements were prepared for all groups in the Report on both bases in each of the four quarters of 1958. These two sets of data provide an overlap period which permits analysts to measure the effects of discontinuities pertinent to their work.

A set of 12 financial ratios computed from both sets of data for 1958 was used to evaluate the effects of the SIC change for purposes of this study. While discontinuities do exist, none are considered sufficiently severe to warrant limiting the time period to the five years beginning in 1958. In fact, in the vast majority of cases the differences in analytic results due to the SIC revision are of no material consequence.

In 1956, a change in the sampling procedure increased the number of small firms in the sample by about half. Calculations identical to those used to test the 1958 break in data consistency were also prepared from both sets of data available for the second quarter of 1956. Again some discontinuities appeared but none were judged large enough to affect any conclusions this study might reach.

Aside from a relatively minor increase in the number of estimated accounts in 1954, the financial statements were prepared on a consistent basis from the third quarter of 1951 through the second quarter of 1956 when the change mentioned in the preceding paragraph was made. In 1951, a completely new sample of firms was drawn because the original sample, drawn from 1943 tax returns and used since 1947, was believed to be outdated. Further tests of data continuity were postponed at this point pending consideration of several other matters, including (1) availability of data from individual firms, (2) the variety of economic

conditions prevailing throughout the 1951-1962 period, and (3) technical suitability--as outlined in the beginning of this section.

There is some limit beyond which it is unreasonable to ask firms to submit data from their historical records and expect a satisfactory response. Given the desirability of analyzing both the aggregate and sample data for the same time period, it was evident that the span could not be pushed back much farther than the beginning of 1952 as far as availability of sample data was concerned.

The other criteria for delineating the time period also pointed to 1952 as a logical starting point. From the viewpoint of technical suitibility, the period of eleven years from 1952 through 1962 is long enough to indicate the seasonal and cyclical behavior of current-liability financing. A longer period would be better for measuring historical trend but, as noted in Chapter III, a precise notion of historical trend is not as critical as it might appear initially.

Prevailing economic conditions, too, favored starting the analysis in 1952. Perhaps the most important economic circumstance for this study is recession experience. It is primarily at times of low business activity that debts create practical problems for numbers of business firms. The period starting in 1952 covers three of the four post World War II recessions, excluding only the first one, which bottomed in 1949. The time period could not be extended backward to include the 1949 recession without adding to discontinuities in the data and reducing substantially the likely response from a mailed request for data. On the other hand, there is little reason to analyze a period starting later than 1952 as this would eliminate useful information.

As the result of all these considerations, the basic time period chosen was the eleven years embracing the 44 quarters starting with the first quarter of 1952 and ending with the second quarter of 1962. When seasonality is important or when an odd number of quarters is needed for computational simplicity, the first quarter of 1963 is added to the basic time period.

There is probably no entirely acceptable measure of the cyclical consistency of this time period given the wide array of manufacturing activities analyzed. In the context of this study, however, the Federal Reserve Board's Index of Industrial Production (3, pp. 84-87) is probably better than most such measures.

Industrial production, as indicated by the overall, monthly, seasonally adjusted index, bottomed in the latter part of 1949, rose sharply to mid-1950, and then leveled off throughout 1951 and 1952. Thus the time period starts in the middle of the sideways movement following recovery from the 1949 recession.

A similar pattern holds for the ending point of the analysis. Industrial production reached a cyclical low in early-1961, rose sharply in mid-1961, and then began a gradual but steady increase. In so far as one can tell, it appears that the end of 1962, too, is located in the breathing spell following recovery from a recession.

Further consideration of economic conditions prevailing in the selected time period reinforces the appropriateness of this choice. It is the only extended period since 1929 free of severe depressions, major war, the unusual problems of converting to a peacetime economy, or extraordinary government intervention in the market for funds.

Perhaps as important as any of these considerations is the possibility that the period since 1951 represents the kind of economic environment businessmen tend to assume will exist in the future. The time period analyzed in this study may be the most logical one because it has the best chance of containing the empirical data most closely resembling the assumed future milieu for decision-making purposes.

War, of course, changes all plans and is probably omitted generally from long-range business forecasts. And as Donaldson reports on the basis of a limited survey (12, p. 169), it is unlikely business plans include express measures to cope with depression of the severity experienced in the 1930's.

As for government intervention, it is not known whether or not pegging the government bond market until March, 1951 affected the market for corporate funds so as to make the prevailing behavior of current-liability financing unique in the pre-accord period. For example, Professor Junk is unable to find any definite relationship between conditions in the money market and the use of trade credit (45, p. 274). At the same time, it may be true that continuing low interest rates on corporate bonds may induce those firms with access to the capital markets to fund a part of that portion of their current liabilities which appears to have become permanently embedded in their financial structures.

Establishing these kinds of relationships between current-liability financing and other economic variables is important enough to be the task of several studies. In this one, however, its more general nature will be served best by discussing the way current-liability financing behaved during the variety of sets of economic

conditions which prevailed during the period studied without over-extending the topic to include precise analysis of the roots of this behavior.

2.6 Summary

The detail of the foregoing is so great that it is convenient to have a brief summary of the data used in this study. These are the raw data from which the statistical results of the study were processed.

Time period.--Current-liability financing is analyzed in the 44 calendar quarters starting with the first quarter of 1952 and ending with the last quarter of 1962. When seasonality of the data is important or when having an odd number of quarters contributes to ease of computation, the first quarter of 1963 is added to the time period.

Aggregates of data.--Data for 25 aggregates of manufacturing corporations are analyzed, including 16 individual industries, the total of all manufacturing corporations, the total of all durables industries, the total of all nondurables industries, and six categories of manufacturing corporations grouped by amount of total assets. All data are from the Quarterly Financial Report for Manufacturing Corporations (39).

Sample data.--Data for individual firms were obtained from a mail survey of 500 manufacturing corporations undertaken expressly for this study.

CHAPTER III

THE QUANTITY, VARIABILITY, AND FUNCTIONS OF TOTAL CURRENT LIABILITIES COMPARED WITH OTHER DEBT AND NET WORTH

3.1 Purpose and Plan of This Chapter

The objective of this chapter is to determine whether there are quantitative differences in the usage of short- versus long-term funds by manufacturing corporations which support the traditional exclusion of short-term funds from analyses of the long-run position of the firm.

A quantitative investigation of this issue is useful in its own right, apart from purely theoretical considerations. It should be pointed out, however, that this analysis is especially germane because the traditional theoretical reasoning which denies the long-run significance of current-liability financing is believed to be faulty. It is sufficient for present purposes to say, in anticipation of ensuing arguments, that the fact that current liabilities are used to finance

current assets instead of fixed or long-term assets is considered insufficient grounds for assuming that they may be neglected in long-range situations. The life expectancy of an individual member of a continuing group of assets has little bearing on the analytic importance of the source of funds which financed the asset. Similarly, the life expectancy of a given member of a group of funds such as current liabilities is of little consequence if the group is, or could be, a continuing one. The theory supporting these contentions is discussed later, mainly in Chapter V.

From a quantitative viewpoint, a source of funds may lack long-run significance if the average amount used were comparatively small, or if the amount were subject to relatively large and uncontrollable variations, or if it did not serve the long-run goals of the firm such as growth. A straightforward way to test whether these conditions apply to current liabilities is to compare their amounts, variability, and functions with those of sources of funds whose long-run significance is not in question--long-term debt and net worth.

Current liabilities are treated as a single source of funds for comparative purposes because their long-term attributes stand out more clearly when the individual liabilities are combined. The major categories of short-term debt are analyzed in Chapter IV.

A number of individual firms is investigated along with the aggregates, i.e., the 25 groups of firms listed in Table 2, page 29. Section 3.2, following, contains a preview of the CL/TA ratios of these firms in order to focus attention immediately on the fact that aggregate data often fluctuate less than their component parts and, in consequence, may be misleading when interpreted as "representative"

of the variations "typically" found in the behavior of the components. The specific purposes of Sections 3.3 through 3.6 are indicated by the above list of section headings and are elaborated upon in the initial part of each section.

So large an amount of data was processed for this study that it is mandatory to present only the most important results and to do so in a standardized semi-outline format when possible. Most of the analytic sections of Chapters III and IV, starting with Section 3.3, are divided further into five parts, including:

1. Purpose--a statement of what the section is intended to accomplish.
2. Calculations--an explanation of the analytic techniques used.
3. Results: Industries and Size Groups.
4. Results: Individual Firms.
5. Tables.

An orderly presentation often requires the division of some of these parts into sub-parts, each of which treats one statistical measure.

3.2 Preview of the Use of Current Liabilities by Individual Firms

Before proceding with the analysis of the aggregates and individual firms it will be worthwhile to indicate briefly the differences in behavior one may expect between them as a precautionary measure, lest the aggregates be construed as something more than broad averages.

One of the principal reasons for using data from individual firms is to have some basis for judging the extent to which the aggregates bury offsetting movements in their components. The method of selecting the sample and, more important, its small size, preclude a

sophisticated analysis of this point. But simple graphical illustrations will serve the purpose well.

Pages 52-55 consist of four graphs, one for each industry that was sampled. Each graph contains eight series of quarterly CL/TA ratios. The middle heavy line is based on FTC-SEC aggregate data and is identical to that in Figure 3, page 40, which is drawn to the same scale. The two broken lines represent plus and minus one standard deviation from the mean of the CL/TA ratios of the sample firms, computed from the ratios of all firms in the sample in a given quarter.

These two broken lines indicate the dispersion of firms within the sample and show that a substantial smoothing effect takes place even in small samples. They also show by their resemblance to their related FTC-SEC aggregate and the fact that they tend to fall rather uniformly on either side of it, that the sample stands a reasonably good chance of containing some of the kinds of data making up the aggregates.

The lighter lines are the quarterly CL/TA ratios of the five individual firms analyzed separately in each of the four industries. These five quarterly series of CL/TA ratios of individual firms vary greatly from the ratios of both the related aggregates and the sample from which they came. Perhaps even better than a summary statistic, the plotted CL/TA ratios of these firms show the wide variety of levels and patterns of current-liability financing that will be encountered in the subsequent analysis of the individual firms, levels and patterns which the aggregates tend to obscure. The individual firms were selected to serve this specific purpose for reasons noted in Section 2.4. It is hoped that the value of the conclusions reached in the statistical

analysis will be increased as a result of considering the differences among firms as well as averages in the form of aggregated data. Simultaneously, analysis of the individual firms will support effectively the proposition that despite the large variations in amount of current liabilities used, current liabilities do not reach zero or nearly so in large numbers of firms when business activity is at a minimum or basic level.

3.3 Size and Variability of the Ratio of Total Current Liabilities to Total Assets Compared with the Ratios of Other Debt to Total Assets and Net Worth to Total Assets

Purpose

Among the first questions that come to mind when considering the relative importance of current liabilities, other debt, and net worth are: (1) how do they compare with respect to amounts of funds provided over a period of time; and (2) what is their relative constancy in providing those amounts. The answers in this section are presented in terms of: (a) the average proportion of total assets financed by each of these sources of funds (Average Ratio); (b) the maximum variation of the proportion (Range); and (c) the "average" variation of the proportion (Coefficient of Variation).

The hypothesis of the thesis would be weakened by results which indicate that current liabilities provide a comparatively insignificant amount of funds over time or that this amount varies considerably more than that provided by other sources of funds. Tables 4 and 5 contain the results for all the industries, size groups, and individual firms.

Calculations

All calculations cover the eleven-year (44 quarter) period from 1952 through 1962, inclusive. The average proportions of total assets

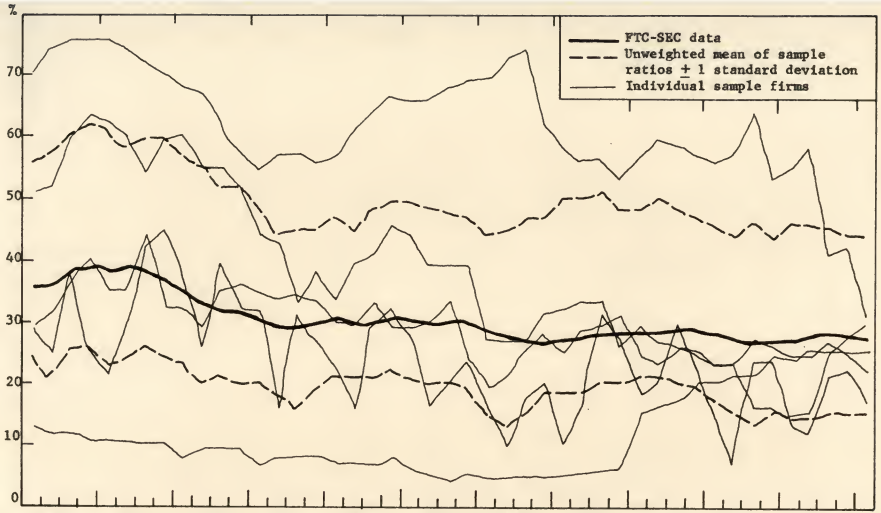

FIGURE 4--QUARTERLY CL/TA RATIOS IN THE ELECTRICAL MACHINERY INDUSTRY, 1952 - 1963

Explanatory notes: See Section 3.2. Source: Compiled from data listed in Section 2.6.

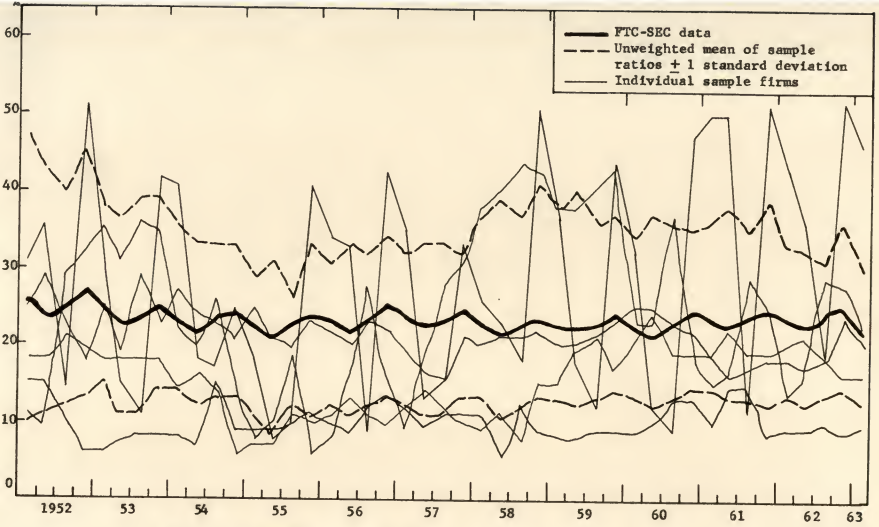

FIGURE 5--QUARTERLY CL/TA RATIOS IN THE FOOD INDUSTRY, 1952 - 1963

Explanatory notes: See Section 3.2. Source: Compiled from data listed in Section 2.6.

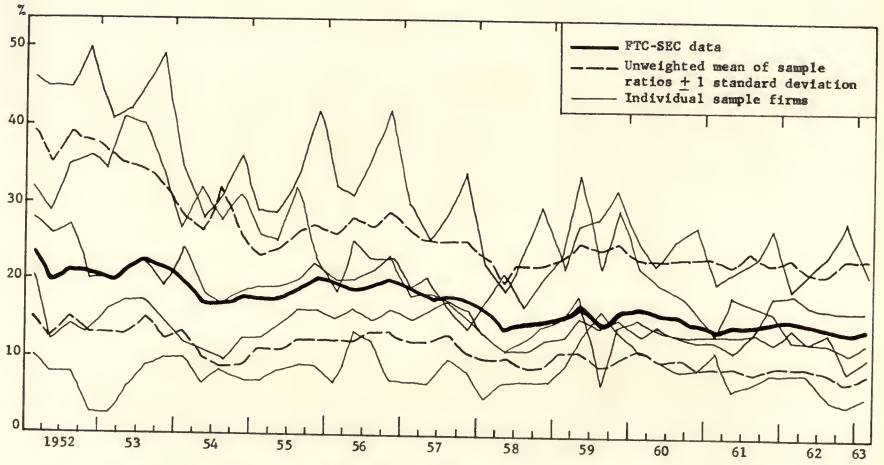

FIGURE 6--QUARTERLY CL/TA RATIOS IN THE PRIMARY METALS INDUSTRY, 1952 - 1963

Explanatory notes: See Section 3.2. Source: Compiled from data listed in Section 2.6.

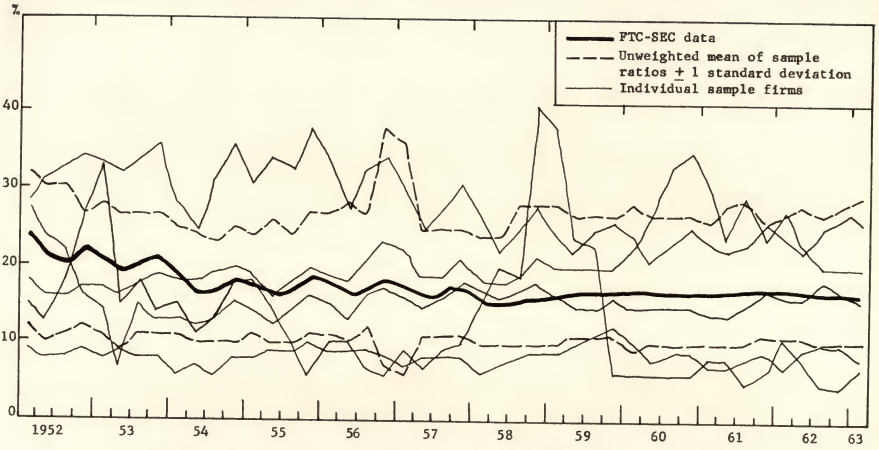

FIGURE 7--QUARTERLY CL/TA RATIOS IN THE CHEMICALS INDUSTRY, 1952 - 1963

Explanatory notes: See Section 3.2. Source: Compiled from data listed in Section 2.6.

financed by the three major sources of funds are measured by dividing their respective 44-quarter sums by the 44-quarter sum of total assets and expressing the results as percentages of total assets. These figures are labeled "Average Ratios" in the first set of three columns in Tables 4 and 5 and in the following discussion.

Maximum variation of the proportions for each source of funds is measured in terms of the range, calculated as the difference between the highest percentage of total assets financed by it in any of the 44 quarters and the lowest such percentage. See the second set of three columns in Tables 4 and 5 and the paragraphs below labeled "Range" for the results of these calculations.

The coefficient of variation is a kind of average degree of variation over the period. It is defined as the standard deviation of a series expressed as a percentage of its mean. In this case the series are the 44 quarterly proportions of total assets financed by each source of funds. See the third group of three columns in Tables 4 and 5 and the paragraphs below headed "Coefficient of Variation."

Since the numbers being analyzed are themselves percentages, it is important to understand that the coeffficient of variation of each series is expressed as a per cent of a percentage. Thus, if the mean of a series were 25% and its standard deviation were 5%, the resulting coefficient of variation would be 20%, indicating that one standard deviation of the series is one-fifth its mean value. In this example, the actual ratios in the series itself would tend to vary from 20% to 30% in terms of the mean value plus and minus one standard deviation.

The abbreviations used in the column headings of the tables are standard throughout this paper.

Cash = cash plus U. S. Government securities
AR = accounts receivable
CA = current assets
FA = fixed assets
TA = total assets, the sum of CA and FA
CL = current liabilities
OD = other debt
TD = total debt, the sum of CL and OD
NW = net worth
NP = net profits after taxes
D&D = depreciation and depletion
S-T = short-term
L-T = long-term

Results: Industries and Size Groups

Average ratio.--As a group, manufacturing corporations financed an average of 22% of their assets with current liabilities, 13% with other debt, and 65% with owners' funds during the eleven years beginning in 1952. The durable-goods sector used more current liabilities (25%), less other debt (12%), and less equity (63%). Nondurables financed a smaller proportion of assets with current liabilities (19%) and used more of both other debt (14%) and equity (67%).

In all three of these aggregates, the average proportion of assets financed with current liabilities was substantially in excess of that financed with longer-term debt. The durable-goods sector used over twice as much short-term as longer-term debt and, somewhat surprisingly, used about one-third more short-term debt than the nondurables sector. Moreover, the proportion of total-debt financing in durables (37%) was about one-tenth greater than in nondurables (33%). These differences are not readily explainable by the customary prescriptions for the "proper" use of debt financing.

Among the industries, current liabilities generally financed 15% to 30% of asset requirements. Only the two extremes, Petroleum Refining (12%) and Apparel (41%) were outside this range. The distribution of

industries within the 15%-30% range was fairly smooth with five industries from 15% to 20%, five between 21% and 25%, and four from 26% to 30%.

Experience of the 16 industries was much less diversified with respect to other-debt financing. Ten of them financed from 10% to 15% of their assets with other debt. The extremes were 6% for Apparel and 19% for Tobacco.

Net worth provided only 53% of total assets in the Apparel industry but 73% in Petroleum Refining. These two industries again were the extremes, as was the case with respect to current-liability financing, but with their positions reversed. Ten of the other 14 industries used 60% to 70% equity financing.

Obviously, those industries with low NW/TA ratios have high TD/TA ratios and vice versa because the ratios are complements. However, the form of the debt, long- or short-term, does not appear to be strongly related to the total amount used or to the (complementary) amount of net worth. It appears generally that higher total debt is associated with higher current liabilities and that lower total debt is associated with a higher proportion of long- to short-term debt. But there are numerous exceptions to these generalizations among the industries.

A much clearer story is told by the asset size groups. The proportion of assets financed with current liabilities declined with each increase in firm size. The smallest firms used 33% short-term debt as a group and the largest 20%. Possibly this does have something to do with access to the organized capital markets, as hypothesized earlier, because the proportion of other debt increased with each

increase in firm size except for the group of smallest firms. The opposing movements of current liabilities and other debt counteracted each other with the result that the NW/TA ratio ranged from 65% to 68% (TD/TA was 35% to 32%) for all size groups except the smallest firms.

Only 56% of the assets of firms under $1 million was furnished by owners. Even so, the smallest firms used a smaller proportion of longer-term debt than firms with assets of $10 million or more. The figures fit well with the widely recognized lack of risk capital for small firms, a deficiency which forces them to incur debt. Apparently the debt on which they are forced to rely is short-term rather than long-term.

The 25 sets of aggregate data show clearly that net worth was the dominant source of funds--as expected--and that current liabilities were at least as important as longer-term debt in terms of average proportion of assets financed over the 11 years. In 24 of the 25 cases the proportion of current liabilities exceeded that of other debt. The only exception was Petroleum Refining, which used less short-term debt and less total debt than any other aggregate.

Current liabilities financed at least 12% of the assets in each of the industries studied and a minimum of 20% of each asset-size group. Other debt financed only 6% - 7% of the assets in some industries and only 8% of those in two of the size groups.

Range.--The maximum variation, or range, of the three sets of quarterly ratios has limited significance because it is based solely on the extreme values. Consequently these comments will be brief. It should be noted at the outset that the figures for the range discussed

below and in Tables 4 and 5 are of the same order as the proportions themselves. A range of 10% would result from subtracting a low quarterly value of, say, 20% from a high quarterly value of 30% for a given ratio.

Perhaps because of the smoothing effect of aggregating the data, the ranges for the three largest groups of firms were smaller than might be expected. More significant, the most variable source of funds was different in each of them. For all manufacturing corporations, the CL/TA ratio had the highest range (6.4%), followed by OD/TA (4.5%) and NW/TA (3.5%). In the durables group OD/TA had the highest range (8.8%), followed by CL/TA (8.1%) and NW/TA (4.9%). NW/TA was highest in nondurables (6.6%) with OD/TA second (6.1%) and CL/TA least variable (5.5%).

Considering all 25 sets of aggregate data, the ranges of the three ratios tended to bunch in an area of 4% to 10%. The ranges of CL/TA were within these limits in 20 instances, those for OD/TA in 20 instances, and those for NW/TA in 15 instances. The range for NW/TA exceeded 10% nine times, that for CL/TA four times, and that for OD/TA twice. In 14 of the 25 aggregates the range of CL/TA was exceeded by that of either OD/TA or NW/TA. Thus the ranges indicated no great differences in maximum variation between the three major sources of funds. To say that NW/TA is the most variable ratio, CL/TA next most variable, and OD/TA least variable is true in many of the aggregates but a substantial number contradict this ranking.

Coefficient of variation (V).--The coefficient of variation, V, is apt to convey more accurately than the range the relative variability of current liabilities, other debt, and net worth because it is

based on all of the 44 quarterly ratios and not just the extremes. As explained under "Calculations," above, the figures for V are percentages of the quarterly ratios which are themselves percentages. This makes the results of different series more comparable to each other than was the case with the range because equal V's indicate equal relative variation after considering differences in the magnitude of the series. For example, if one series varied uniformly from 3% to 9% and another from 57% to 63%, the range of both would be 6%. But the V of the smaller series would be close to 50% and that of the larger would be close to 5%.

NW/TA was by far the most stable of the three ratios in terms of V. In 22 of the 25 sets of aggregate data, the V of NW/TA was less than that for either CL/TA or OD/TA. Moreover, the maximum V for NW/TA was only 9% (Apparel) and in the majority of cases it was less than 5%. The maximum V for CL/TA was 19% (Motor Vehicles) and for OD/TA was 36% (Lumber). Neither CL/TA nor OD/TA had a V of less than 5% in any case.

Just as clearly, CL/TA was the next most stable ratio. The V of CL/TA was less than that for OD/TA in 19 of the 25 aggregates studied and less than one-half of 1% higher in three of the remaining six. The CL/TA ratio was significantly more variable than OD/TA in only three aggregates, namely Chemicals, Petroleum Refining, and the size group of firms with over $100 million of assets. Moreover, the V of CL/TA exceeded 10% in only seven of the 25 aggregates studied while that for OD/TA did so in 18 cases.

Within the size groups, the V of CL/TA increased as asset size increased while the V's of both OD/TA and NW/TA tended to fall. These

relationships may result from (1) a tendency on the part of larger firms to limit current liabilities more to the financing of variable asset needs than smaller firms and/or (2) a greater degree of overall stability in larger firms compared with smaller firms.

The data would seem to indicate that, in general, the constancy with which the three major sources of funds finance assets is more a matter of firm size than line of business. Although the figures for durables indicated greater variablility in the use of all three sources of funds than those for nondurables, this notion is contradicted as often as it is confirmed by the industries themselves. Nevertheless, it is entirely clear that, in terms of V, net worth constituted the most stable source of funds with respect to the proportion of total assets financed, current liabilities was next most stable, and other debt was the least stable.

Results: Individual Firms

Average ratios.--In the Electrical Machinery industry, the average CL/TA ratio calculated from FTC-SEC data was 30%. The ratios of the individual sample firms were from 13% to 62% with the middle three firms from 24% to 40%. This degree of dispersion is typical among the sample firms. The CL/TA ratios for the five Food firms were from 10% to 33%, a distribution which is fairly well centered on the industry average of 23%. In Primary Metals the five firms had CL/TA ratios of 8% to 30% compared with an industry average of 17%. And in Chemicals, the industry average of 17% was located centrally among the ratios of the five firms, which ranged from 8% to 27%.

In each of the four industries, the average use of other debt varied from 2% or less to about 30% except for one firm in Primary Metals which financed 56% of its assets with other debt on the average during the 11 years. Net worth was used to finance anywhere from 36% to 86% of total assets with most of the 20 firms financing at least 60% of their assets with owners' funds.

The proportions of total assets financed with current liabilities are distributed among the 20 sample firms as follows. Two firms used less than 10% current liabilities, seven used 10% to 20%, eight used between 20% and 30%, and three used over 30%. Three-fourths of these firms used more current-liability than other-debt financing. Of the five firms in which average other debt exceeded average current liabilities, four were those firms selected expressly because they used the lowest levels of current liabilities of all the sample firms. Thus the individual sample firms confirm that, on either an absolute or a comparative basis, current liabilities provide substantial amounts of funds to manufacturing corporations on the average over long periods of time.

Range.--With few exceptions the ranges for all three ratios are greater for the individual firms than for the related industries. Considering all 60 ranges (20 firms with three ratios each), exactly half were greater than 20% while in no case was any range for the 25 aggregates as high as 20%. Since the firms varied so widely with respect to the proportions of the three sources of funds it will be better to assess their relative variability on the basis of the coefficient of variation, which takes into consideration differences in the magnitudes of the proportions.

Coefficient of variation (V).--Of the 60 V's (20 firms with three ratios each), 56 equalled or exceeded that for the related industries. Two of the remaining four were cases in which the firm used no OD and hence had no V for its OD/TA ratio. This confirms once again the much greater degree of variation among individual firms than aggregates due to the smoothing effects of combining the experiences of many firms.

Nonetheless, the important conclusions of the analysis of individual firms are the same as those for the aggregates. In the 18 firms which used all three sources of funds, NW/TA had the lowest V in 15 of them. The V of CL/TA was less than that for OD/TA in 12 of the 18 firms.

Undoubtedly the high V's of some of the OD/TA ratios were caused by the fact that very little other debt is used by the firm in question. In these cases, small changes in the dollar amounts involved result in large V's because (1) the standard deviation of the series tends to be high and (2) the mean tends to be low. V, it will be recalled, is the standard deviation of a series divided by its mean.

Even with the above qualifications, however, neither the aggregate nor the sample data yield any basis at all for surmising that current-liability financing is in some way unique because of its comparative variability on an average basis over a long period of time.

3.4 Sources of Long-Term and Shorter-Term Influences on the Total Dollar Amount of Total Assets

Purpose

The object of the analysis in this section is to determine the functions of current liabilities, other debt, and net worth in terms of their relative contributions to long-term and shorter-term changes in total assets.

In Section 3.3 it is revealed that there is no reason to consider total current liabilities an unusual source of funds deserving of special treatment by virtue of its average use through time or variability in that use. In this section, the kinds of variation of the three sources of funds are analyzed to assess the extent to which current liabilities provide unique influences on total assets. If it were found that changes in current liabilities were insignificant in relation to changes in total assets or that current liabilities were responsible for nearly all shorter-term changes and virtually no long-term changes in total assets, the hypothesis of the thesis would be weakened.

The language used throughout this section may imply that changes in the three sources of funds cause changes in total assets whereas, in reality, it is at least as likely that changes in requirements for assets cause changes in the three sources of funds. Neither of these cause and effect relationships should be inferred from the language used, which has been adopted purely as a matter of convenience.

Calculations

All calculations cover the 44 quarterly intervals starting with the first quarter of 1952 and ending with the first quarter of 1963. The results are contained in Tables 6 and 7, at the end of this section.

All quarter-to-quarter changes, positive and negative, in the three major sources of funds influence the amount of total assets. This is true in the sense that were any of these changes different from observed levels, total assets would have been different, too, given the balancing nature of double-entry bookkeeping. Thus the sum of all quarter-to-quarter changes, without regard to sign, in the three

TABLE 4--THE SIZE AND VARIABILITY OF THE RATIO OF TOTAL CURRENT LIABILITIES TO TOTAL ASSETS COMPARED WITH THE RATIOS OF OTHER DEBT TO TOTAL ASSETS AND NET WORTH TO TOTAL ASSETS FOR SELECTED GROUPS OF MANUFACTURING CORPORATIONS 1952 - 1962

Industry or Size Group	Average Ratios			Range of Quarterly Ratios			Coefficient of Variation (V)		
	%CL/TA	%OD/TA	%NW/TA	%CL/TA	%OD/TA	%NW/TA	CL/TA	OD/TA	NW/TA
Durable Goods Industries	25.3	11.5	63.1	8.1	8.8	4.9	9.6	17.6	1.9
Electrical Machinery	29.8	12.3	57.9	12.3	6.5	8.1	12.2	15.9	4.2
Furniture	26.9	7.7	65.4	8.6	4.3	11.4	6.9	16.7	4.1
Lumber	20.0	12.9	67.1	6.8	13.4	16.7	6.7	35.8	7.3
Motor Vehicles	28.0	7.7	64.3	18.8	7.1	12.0	18.9	28.1	5.5
Other Metal Products	24.3	10.2	65.5	6.3	6.7	4.7	6.5	16.7	1.9
Primary Metals	16.8	15.3	67.9	9.8	8.1	7.0	15.2	15.0	2.2
Stone, Clay, Glass	17.4	10.9	71.7	6.0	6.2	4.5	9.9	16.6	1.6
Nondurable Goods	18.7	14.0	67.3	5.5	6.1	6.6	5.9	5.7	1.6
Apparel	40.8	6.4	52.8	13.4	5.0	16.2	9.5	20.4	8.9
Chemicals	17.2	14.4	68.4	9.0	6.6	4.6	11.0	8.1	1.7
Food	23.3	12.8	63.9	5.8	3.2	5.5	5.8	5.6	2.1
Paper	15.6	15.4	69.0	7.3	6.7	5.5	11.0	12.1	1.6
Petroleum Refining	11.9	14.9	73.1	3.7	2.7	4.9	7.6	5.3	2.0
Printing	25.8	15.6	58.5	4.2	8.7	10.6	4.7	16.7	5.1
Rubber	22.9	16.8	60.3	8.3	4.5	7.3	7.4	8.0	3.6
Textiles	21.3	10.2	68.5	7.7	4.8	10.6	8.8	13.0	3.9
Tobacco	22.0	18.9	59.2	10.8	12.9	15.1	11.1	19.6	6.7
All Manufacturing Corps.	22.1	12.7	65.2	6.4	4.5	3.5	7.5	8.9	1.4
TA Under $1 Million	32.9	10.6	56.5	7.3	6.0	11.5	6.5	16.8	6.5
TA $1 - $5 Million	27.5	7.8	64.7	6.5	4.8	11.1	6.1	17.9	4.3
TA $5 - $10 Million	23.7	8.4	67.9	5.7	5.3	8.6	6.4	14.4	2.8
TA $10 - $50 Million	22.6	10.4	67.0	6.9	4.6	4.9	7.6	10.6	2.0
TA $50 - $100 Million	20.9	13.3	65.7	7.6	5.9	5.3	8.8	11.7	2.0
TA Over $100 Million	19.8	14.5	65.8	7.2	3.5	5.3	10.6	5.1	2.3

Explanatory notes: See Section 3.3, "Calculations." Source: Compiled from data listed in Section 2.6.

TABLE 5--THE SIZE AND VARIABILITY OF THE RATIO OF TOTAL CURRENT LIABILITIES TO TOTAL ASSETS COMPARED WITH THE RATIOS OF OTHER DEBT TO TOTAL ASSETS AND NET WORTH TO TOTAL ASSETS FOR SELECTED INDIVIDUAL MANUFACTURING CORPORATIONS 1952 - 1962

Industry or Firm	Average Ratios			Range of Quarterly Ratios			Coefficient of Variation (V)		
	%CL/TA	%OD/TA	%NW/TA	%CL/TA	%OD/TA	%NW/TA	%CL/TA	%OD/TA	%NW/TA
Electrical Machinery	29.8	12.3	57.9	12.3	6.5	8.1	12.2	15.9	4.2
Firm 1.	13.3	27.3	59.3	21.9	8.1	17.2	59.2	8.4	8.4
Firm 2.	23.8	-	76.2	37.9	-	37.9	36.8	-	11.5
Firm 3.	28.1	2.0	69.9	24.5	4.9	26.2	17.7	67.4	8.2
Firm 4.	40.3	9.0	50.7	47.4	20.4	61.6	36.9	96.2	37.7
Firm 5.	61.6	2.6	35.8	35.0	7.3	29.6	13.4	101.1	21.8
Food	23.3	12.8	63.9	5.8	3.2	5.5	5.8	5.6	2.1
Firm 6.	10.0	29.9	60.1	9.5	14.5	12.2	24.6	11.8	4.7
Firm 7.	15.2	10.6	74.2	17.5	26.7	20.3	29.7	80.2	6.8
Firm 8.	20.7	8.9	70.3	14.0	15.7	25.6	14.9	43.9	9.4
Firm 9.	25.9	1.9	72.2	38.4	8.4	38.1	44.2	90.1	14.6
Firm 10.	32.7	16.4	50.9	43.7	26.0	43.6	49.9	28.4	20.2
Primary Metals	16.8	15.3	67.9	9.8	8.1	7.0	15.2	15.0	2.2
Firm 11.	8.4	56.0	35.5	12.8	33.6	30.7	30.0	19.7	31.2
Firm 12.	13.7	21.3	65.0	12.2	8.1	10.6	16.7	7.6	3.8
Firm 13.	17.1	11.3	71.6	17.2	20.3	19.2	24.1	69.3	6.7
Firm 14.	21.3	8.5	70.2	31.6	23.2	20.3	33.7	86.9	6.6
Firm 15.	30.2	-	69.8	31.0	-	31.0	27.7	-	12.6
Chemicals	17.2	14.4	68.4	9.0	6.6	4.6	11.0	8.1	1.7
Firm 16.	8.5	28.8	62.7	6.3	6.4	6.1	15.1	5.8	2.5
Firm 17.	13.9	0.4	85.7	36.7	6.8	36.7	63.4	190.7	10.4
Firm 18.	15.6	1.3	83.1	21.0	9.4	16.5	20.1	115.2	3.5
Firm 19.	22.3	6.1	71.6	18.5	17.1	16.5	20.6	66.1	5.6
Firm 20.	26.8	1.6	71.6	16.2	23.5	21.7	15.9	157.6	9.4

Explanatory notes: See Section 3.3, "Calculations." Source: Compiled from data listed in Section 2.6.

sources of funds is defined for analytic purposes as the sum of influences on total assets. The first three columns of Tables 6 and 7 express total unsigned changes in each account as a percentage of the sum of all such changes in the three accounts. In this way it is possible to compare the three accounts with respect to their proportionate overall influences on total assets. (The term "influences on" (total assets) is preferable to "changes in" because any changes in a source may be offset by changes in another source with no change apparent in total assets.)

Some of the changes in the sources have lasting influence while the effect of the rest is for a shorter period. That is, some changes are not counteracted by changes of opposite sign in the period studied and the others are. Those that have lasting effect are evident in the form of net growth or decline in a given account over the 44 quarterly intervals and their sum is the balance in each account on March 31, 1963 less the balance on March 31, 1952. Columns four through six in Tables 6 and 7 express the long-term influences, thus defined, of each of the three sources of funds in terms of its proportion of the net change in total assets over the period.

The difference between total changes and long-term changes in each account is its shorter-term influence on total assets, the sum of all changes without lasting effect. These shorter-term influences are listed in columns seven through nine in Tables 6 and 7 as percentages of the total of all shorter-term influences.

The expression "shorter-term" influences is arbitrary and is intended to mean "less-than-long-term" rather than "one-year-or-less" as implied by the conventional meaning of "short-term." Thus the

shorter-term influences include, for example, (1) the seasonal rise and fall of current liabilities, (2) the incurrence and repayment of longer-term debt, and (3) offsetting profits and losses. While these changes are dissimilar when viewed in terms of their causes, their influences on the level of assets are much more alike in the present context in the sense that they all finance the fluctuating margin of asset requirements. Although certain conceptual limitations are recognized, the analysis will serve its intended purpose of indicating whether short- and long-term sources of funds are as specialized in their functions as maintained in traditional theory.

Certain limitations in the data underlying the calculations also should be recognized. Both offsetting intra-quarter and intra-account changes are lost. Since all such changes are shorter-term influences, by definition, total shorter-term influences in each account are understated. It is not known definitely what effects this has on the results. However, since they are stated in terms of relative proportions, it is most likely these limitations have no substantial effects on the conclusions reached.

Results: Industries and Size Groups

Proportions of total influences.--The results for "all manufacturing corporations," "durables," and "nondurables" indicate that current liabilities exerted 31% - 36% of total influences on total assets, other debt 15% - 20%, and net worth 45% - 50%. However, these narrow ranges are not confirmed by either the industries or size groups.

Among the industries, current liabilities exerted anywhere from 20% (Petroleum Refining) to 73% (Tobacco) of all influences on total

assets. In all industries and size groups except Petroleum Refining, the proportional influence of current liabilities was 30% or greater. And in all aggregates, without exception, the total proportional influence of current liabilities was greater than that of other debt, being at least double in 19 of the 25 sets of data.

Other debt did not provide as much as one-fourth of the influences on total assets in any aggregate. Considering all 25 aggregates except Petroleum Refining and Tobacco, the maximum influence of other debt (22% in Lumber) was less than the minimum influence of both current liabilities (30% in the group of largest firms) and net worth (24% in Food).

Net worth exerted more influence on total assets than either current liabilities or other debt in 15 of the aggregates; current liabilities was high in the other ten. However, only in Petroleum Refining and in the group of largest firms did net worth finance over half the total influences. In most of the other aggregates, net worth provided from 30% to 50% of the total influences, the only exceptions being Tobacco (19%), Food (24%), and Apparel (26%).

In the size groups, the influence of current liabilities declined progressively from 49% in the smaller firms to 30% in the largest. The influence of other debt was fairly insensitive to changes in firm size, ranging from 14% to 19%. That of net worth mirrored current liabilities, starting at 36% - 37% in firms with up to $5 million in total assets and rising progressively to 55% in the largest firms.

In general, the above results combine two of the factors analyzed in Section 3.3, the average ratio of each source of funds to total assets and the coefficient of variation (V) of the quarterly ratios.

The proportion of influences on total assets exerted by a source of funds depends on its size and variability. Thus, even though CA/TA is generally less variable that OD/TA in terms of V, this is more than offset by the larger size of CL/TA with the result that current liabilities exert a larger proportion of total dollar influences on total assets than does other debt. On the other hand, the relatively large size of NW/TA oftentimes is more than offset by its relatively small V, with the result that net worth exerts a smaller proportion of total influences on total assets than its size might lead one to presuppose.

Because of these relationships, the differences among the 25 aggregates with respect to the total influence on total assets of each of the three sources of funds are clearly a further reflection of differences in size and variability. However, since the underlying data are dollars rather than ratios in this section, the figures indicate in a more straightforward manner the relative influences on total assets emanating from each source of funds.

Proportion of long-term influences.--In 21 of the 25 aggregates, net worth was the dominating source of long-term, i.e., net growth/(decline) influences on total assets. Other debt was first in one and current liabilities in three. Other debt was the second most prominent source in 16 aggregates--current liabilities in nine. Thus, in most instances, long-term funds provided the largest portion of long-term influences on total assets--a fact not disputed anywhere in this study.

Nevertheless, the function of current liabilities as a source of long-term influences is far from insignificant. Among manufacturing corporations as a whole, approximately 15% of the growth of total

assets was sustained by current liabilities during the period studied. Current liabilities provided 55% of the growth influences in the Apparel industry and approximately 40% in the groups of all firms with assets up to $5 million. Even in the four industries selected initially because they used the lowest amounts of current-liability financing, a minimum of 8% of growth funds was obtained from current-liability sources.

Only in Primary Metals, Textiles, and the group of firms with assets of $10 - $50 million was the long-term influence of current liabilities either inconsequential or negative. A negative figure expresses the overall decline in an account, e.g., net debt repayment, in the period studied as a per cent of the growth of total assets. While this is important only in the Textile industry among the aggregates, negative figures are more common in the sample firms, discussed in the next part.

The size groups present a varied picture. Current liabilities provided 46% of the growth of smallest firms, as mentioned above, and successively declining amounts of the growth of larger firms, up to a point. The use of current-liability financing actually declined by an amount equal to 8% of the growth of total assets in the $10 - $50 million size group. But then the growth influence of current liabilities increased in the two groups of largest firms, furnishing 14% of such influences for firms with assets over $100 million.

Other debt was responsible for a substantial proportion of the growth influences in all the size groups, ranging from 18% in the largest firms to 38% in both the smallest and the medium sized firms. Thus there is no clear relation between asset size and use of other debt for growth.

Net worth provided only 16% of the growth funds for the smallest firms but the proportion increased rapidly to the 65% - 70% level as firm size increased to $50 million. After that the proportion leveled off. Probably this pattern reflects the direct relationship between profitability, basic cash flow, and firm size, to be discussed in Section 3.6, which results in relatively high levels of retained earnings for larger firms.

Proportion of shorter-term influences.--As would be expected, the proportionate shorter-term, i.e., non-growth/(-decline) influence of current liabilities was dominant, providing over half of all such influences in 21 of the aggregates. In contrast, the proportionate shorter-term influence of other debt exceeded 20% only in Petroleum Refining (30%).

The shorter-term influences of net worth and those of other debt each were second to that of current liabilities in about the same number of cases. However, net worth is far more variable than other debt with respect to the amount of shorter-term influence on the aggregates. Net worth furnished less than 10% in ten of them and 30% or more in eight.

There was no outstanding pattern in the size groups for any of the three sources of funds. Excluding firms with over $100 million of assets, current liabilities provided 45% - 54% of the shorter-term influences, other debt 7% - 16%, and net worth 30% - 43%. In the largest firms, however, current liabilities provided virtually all the shorter-term influences. This indicates that the total other debt and total net worth accounts of these combined firms increased practically without interruption during the period. The same tends to be true of

industries dominated by firms with assets over $100 million as well as "all manufacturing corporations."

Interestingly, the combined long-term sources furnished at least 46% of the shorter-term influences in each of the size groups except the group of largest firms. Although this was the case in only three of the 16 industries, the shorter-term influence of long-term funds did exceed 20% in ten of them. It is evident, therefore, that the contribution of long-term funds to shorter-term influences on the dollar amount of total assets was substantial, even though current liabilities furnished the bulk of them. Only in the case of the very largest firms, and industries they dominate, did current-liability financing absorb nearly all the variations in total assets. Significantly, these are the firms on which traditional financial theory tends to focus.

Results: Individual Firms

The sample results tend to confirm those of the aggregates and at the same time illustrate the large differences between firms within a given industry.

Proportion of total influences.--Among the 20 firms, current liabilities exerted the most total influence on total assets in 17, other debt in two, and net worth in one. Current liabilities provided 50% or more of total influences in half the firms, net worth reached this level only once, and other debt not at all. And in all firms but one the influence of current liabilities was greater than that of net worth despite the generally larger size of net worth. These results, along with those of the aggregates, leave no alternative but to suggest that current liabilities may generally be considered as important as

any source of funds in terms of total influences on the dollar amount of total assets.

Proportions of long-term and shorter-term influences.--There is no need to document once more the facts that long-term funds furnished the bulk of long-term influences on total assets and that short-term funds provided most of the shorter-term influences. The important point in this context is that current liabilities accounted for substantial amounts of net growth or decline while other debt and net worth provided equal or greater amounts of funds which were reflected only temporarily in total assets.

In eight of the 20 firms the long-term influence of current liabilities (i.e., relative contribution to either net growth or decline) was less than 5%, indicating that these firms probably used current liabilities for little other than financing temporary or seasonal asset requirements. (This was the case in only one of the 25 aggregates.) In the other 12 firms, the long-term influence of current liabilities ranged all the way from minus 205% to plus 98% of the net change of the three sources of funds combined.

These figures tend to undermine one's confidence in any concept of a normal or average level of behavior of current liabilities with respect to the growth or decline of the firm. Instead, the contribution of current liabilities, as well as the other sources of funds, to long-term movements in the dollar amount of total assets would seem to be as much a matter of management policy as it is a matter of availability, cost, and the length of time to maturity of the alternative sources of funds.

The sample firms indicated the presence of considerably more shorter-term influence of long-term funds than their respective aggregates. In 14 of the 18 firms that used other debt, its shorter-term influence exceeded that of the related aggregate. The same was true in 13 of the firms with respect to net worth. Moreover, the shorter-term influence of all long-term sources combined exceeded 20% in 14 of the firms and was over 10% in all but three. Consequently, the results for individual firms confirm those of the aggregates by indicating strongly that current liabilities are hardly unique by virtue of financing the shorter-term changes in total assets.

3.5 Sources of Long-Term and Shorter-Term Influences on the Total Dollar Amount of Current Assets

Purpose

Financial theorists generally maintain that current liabilities are used to finance only current assets, a point not contested in this study. It seems improbable that substantial amounts of land, plant, or equipment would be financed with current liabilities other than in the temporary manner outlined in Section 1.2. If this is true, then the functions of current-liability financing will stand out more sharply when attention is focused directly on its influences on current assets rather than total assets as in Section 3.4. At the same time, if it is true that current assets are the most variable part of total assets, the shorter-term influences of long-term funds also will stand out more clearly when the analysis concentrates on current assets. In addition, the effects of any shorter-term influences of long-term funds will be more comparable to those of short-term funds if both are assessed with respect to current rather than total assets.

TABLE 6--SOURCES OF QUARTER-TO-QUARTER INFLUENCES ON THE TOTAL DOLLAR AMOUNT OF TOTAL ASSETS IN SELECTED GROUPS OF MANUFACTURING CORPORATIONS
MARCH 31, 1952 - MARCH 31, 1963

Industry or Size Group	Proportion of Total Dollar Influences on Total Assets			Proportion of Influences Resulting in Net Growth/(Decline)			Proportion of Non-Growth/(-Decline) Influences		
	CL	OD	NW	CL	OD	NW	CL	OD	NW
Durable Goods Industries	35.6	19.5	44.8	16.6	21.1	62.3	66.9	16.9	16.2
Electrical Machinery	36.2	18.1	45.7	22.9	18.1	59.0	78.6	18.2	3.2
Furniture	42.0	15.4	42.6	29.4	16.4	54.2	47.1	15.1	37.8
Lumber	35.9	21.7	42.5	22.2	52.3	25.4	41.0	10.1	48.9
Motor Vehicles	60.5	7.2	32.3	19.6	11.8	68.6	93.8	3.4	2.9
Other Metal Products	48.8	13.7	37.5	15.6	22.7	61.7	81.4	4.8	13.8
Primary Metals	44.9	19.5	35.6	(0.3)	29.8	70.5	83.7	10.6	5.8
Stone, Clay, Glass	35.5	15.2	49.3	11.3	19.1	69.5	71.4	9.4	19.2
Nondurable Goods	31.5	19.3	49.2	14.0	18.8	67.2	61.3	20.1	18.6
Apparel	66.5	7.4	26.0	55.1	16.9	28.0	69.3	5.2	25.6
Chemicals	36.7	17.5	45.8	8.9	23.4	67.6	87.6	6.6	5.8
Food	67.5	8.1	24.4	19.9	20.1	60.0	91.9	2.0	6.1
Paper	32.2	21.2	46.6	7.7	25.3	66.9	72.4	14.5	13.1
Petroleum Refining	20.4	16.3	63.3	9.8	13.3	76.9	69.5	29.7	0.8
Printing	45.4	20.7	33.9	27.9	26.4	45.6	66.6	13.8	19.6
Rubber	39.0	15.4	45.6	17.7	15.3	67.0	79.8	15.6	4.6
Textiles	54.8	16.2	29.0	(46.9)	(449.4)	596.3	53.9	11.9	34.2
Tobacco	72.8	8.6	18.6	17.0	(15.2)	98.2	85.4	14.0	0.6
All Manufacturing Corps.	35.2	15.5	49.3	15.3	20.1	64.6	99.3	0.7	0.0
TA Under $1 Million	48.8	14.0	37.1	46.2	37.7	16.1	49.6	7.2	43.2
TA $1 - $5 Million	49.5	14.5	36.0	36.2	30.1	33.6	53.7	9.6	36.7
TA $5 - $10 Million	40.7	16.8	42.5	15.9	29.7	54.4	45.3	14.4	40.3
TA $10 - $50 Million	39.7	16.1	44.1	(7.5)	38.0	69.6	52.4	10.3	37.3
TA $50 - $100 Million	33.9	18.9	47.1	10.1	22.4	67.6	54.3	16.0	29.7
TA Over $100 Million	30.0	15.0	55.0	14.5	17.7	67.7	96.5	3.5	0.0

Explanatory notes: See Section 3.4, "Calculations." Source: Compiled from data listed in Section 2.6.

TABLE 7--SOURCES OF QUARTER-TO-QUARTER INFLUENCES ON THE TOTAL DOLLAR AMOUNT OF TOTAL ASSETS IN SELECTED INDIVIDUAL MANUFACTURING CORPORATIONS
MARCH 31, 1952 - MARCH 31, 1963

Industry or Firm	Proportion of Total Dollar Influences on Total Assets			Proportion of Influences Resulting in Net Growth/(Decline)			Proportion of Non-Growth/(-Decline) Influences		
	CL	OD	NW	CL	OD	NW	CL	OD	NW
Electrical Machinery	36.2	18.1	45.7	22.9	18.1	59.0	78.6	18.2	3.2
Firm 1.	34.1	34.4	31.5	34.4	22.3	43.2	33.7	50.7	15.6
Firm 2.	80.0	-	20.0	4.5	-	95.5	87.8	-	12.2
Firm 3.	50.1	22.5	27.4	18.2	0.8	81.0	66.4	33.6	0.0
Firm 4.	69.1	10.2	20.7	(58.0)	(71.3)	229.3	75.9	14.5	9.6
Firm 5.	78.9	5.3	15.8	(46.1)	26.1	119.9	92.3	3.0	4.6
Food	67.5	8.1	24.4	19.9	20.1	60.0	91.9	2.0	6.1
Firm 6.	46.8	32.7	20.5	1.3	52.6	46.1	64.6	24.9	10.6
Firm 7.	43.9	35.3	20.9	(205.9)	(551.5)	857.4	44.9	37.5	17.6
Firm 8.	42.9	7.0	50.1	19.4	0.1	80.5	79.7	17.8	2.5
Firm 9.	79.7	7.3	13.0	98.0	(12.9)	14.9	79.1	8.0	12.9
Firm 10.	83.6	9.2	7.1	54.4	8.9	36.7	86.7	9.3	4.0
Primary Metals	44.9	19.5	35.6	(0.3)	29.8	70.5	83.7	10.6	5.8
Firm 11.	34.9	43.5	21.5	2.5	45.3	52.2	51.0	42.7	6.3
Firm 12.	54.1	20.5	25.4	(6.5)	23.1	83.4	70.2	19.8	10.0
Firm 13.	43.9	34.6	21.5	(1.7)	45.9	55.8	67.4	28.8	3.8
Firm 14.	61.3	14.7	24.0	2.9	35.9	61.2	94.4	2.7	3.0
Firm 15.	81.7	-	18.2	(14.0)	-	114.0	98.2	-	1.7
Chemicals	36.7	17.5	45.8	8.9	23.4	67.6	87.6	6.6	5.8
Firm 16.	45.1	28.1	26.8	3.7	34.3	62.0	60.2	25.9	13.9
Firm 17.	54.2	2.1	43.6	3.7	(2.4)	98.7	67.2	3.3	29.5
Firm 18.	46.1	11.3	42.6	1.8	3.9	94.3	71.9	15.6	12.5
Firm 19.	56.7	4.0	39.2	21.0	(9.4)	88.4	82.9	13.9	3.2
Firm 20.	47.9	7.6	44.6	25.0	(1.7)	76.7	67.3	15.5	17.2

Explanatory Notes: See Section 3.4, "Calculations." Source: Compiled from data listed in Section 2.6.

Calculations

All calculations are conceptually similar to those in Section 3.4 and cover the same time period, March 31, 1952 through March 31, 1963. However, only two sources of funds are contrasted, short-term and long-term, because there is no acceptable way of dividing the separate influences of other debt and net worth into the parts which affect fixed assets and those which affect current assets.

It is assumed that (1) the influences of long-term funds on current assets are the amounts remaining after deducting all changes in fixed assets from the sum of all changes in other debt plus all changes in net worth, and (2) all influences of short-term funds (current liabilities) are reflected in current assets unless "1" is negative, i.e., long-term funds are unable to provide all the influences on fixed assets. As before, changes are added without regard to sign and thus constitute "influences on" current assets.

The total influence on current assets generated by each of these two sources is expressed as a percentage of the total of such influences. See the first two columns in Tables 8 and 9 for the results.

Long-term influences are defined, as in Section 3.4, as the net change in a given account during the period. Total long-term influences on current assets equal the change in current assets over the period. The part contributed by short-term funds is the net change in current liabilities in the period. Long-term funds are assumed to have furnished the balance of long-term influences. The results are stated in terms of the percentages contributed by long- and short-term funds, respectively, in columns three and four of Tables 8 and 9.

Shorter-term influences are defined as total influences on current assets less long-term influences. As before, the results are expressed in terms of the percentage contribution of each source to shorter-term influences. See columns five and six in Tables 8 and 9.

The results of two other calculations are discussed in the text but not included in the tables. Information accumulated with the calculations described above also permits computation of the proportions of the total influence of each source of funds which are shorter- and long-term. Thus the proportion of the influences of short-term funds which has long-run effects can be compared with that having shorter-term effects. The same kind of analysis of the total influence of long-term funds concludes this section.

Results: Industries and Size Groups

Proportion of total influences.--In all 25 aggregates, half or more of the total influences on current assets were generated by short-term funds. But the overall influence of long-term funds was far from negligible, contributing one-third or more of the total in 17 aggregates and at least 17% in all but one (Stone, Clay, Glass with a ratio of 4%).

There were no strong relationships between the sources of total influences on current assets and firm size, durables versus nondurables, or amount of current-liability financing used. Among the industries, however, differences in the proportions were wide, ranging from 4% to 48% for long-term sources and from 52% to 96% for short-term sources. The size groups were much less widely dispersed, ranging from 29% to 46% for long-term sources and 54% to 71% for short-term sources. Apparently the source of influences on current assets was determined by

characteristics other than firm size. This was true also with regard to total influences on total assets.

Proportion of long-term influences.--The long-term influences of long-term funds were sufficiently large to finance all the net growth of fixed assets and still provide over half the net growth of current assets in 20 of the 25 aggregates. However, short-term sources furnished over 20% of the long-term influences in all but two aggregates and one-third or more in 15. The contribution of current liabilities to growth of current assets was substantial.

Although the proportions of total influences on current assets of the two sources of funds were not related strongly to asset size, it appears that the proportion of long-term influences was. A much larger proportion of the growth in current assets was furnished by long-term funds in firms with total assets over $5 million than in smaller firms. This reflects the fact that larger firms tend to finance a larger portion of current assets with long-term funds, as seen in their generally higher current ratios.

Proportion of shorter-term influences.--As expected, the shorter-term influence of short-term funds on current assets was large. Much more striking was the considerable shorter-term influence of long-term funds in many of the aggregates, including all the size groups except the largest firms. In all of the other size groups, the proportion of shorter-term influences of long-term funds was at least 25%, ranging up to 39% in the smallest firms. The proportion varied widely among the industries with half above and half below 19%.

As in the case of "total influences," discussed above, the source of shorter-term influences does not appear to be strongly related to

firm size. Moreover, the data suggest that the source of shorter-term influences on current assets was not especially dependent on the relative amount of current liabilities used. As indicated in Section 3.3, as the CL/TA ratios declined with increasing asset size, their V's increased. The smaller relative amounts of current liabilities in larger firms worked harder to finance fluctuating asset requirements and, in line with the preceding part, they contributed less to growth.

The influences of long-term sources on current assets.--The object of this part and the next is to tell how influences of the two sources of funds are divided into shorter- and long-term influences on current assets. In the three preceding parts the results were stated in terms of proportions of a given kind of influence coming from each source. In this part and the next the results are expressed as the proportions of the total influence of a given source on current assets which are long- or shorter-term.

The influences of long-term funds on current assets were long-term to a large extent but their shorter-term influences were substantial nevertheless. In 21 of the 25 aggregates over 10% of the total influences of long-term funds on current assets was shorter-term. In 15 the shorter-term influence of long-term funds exceeded 30%, and in ten it was over 50% of the total influence of long-term funds on current assets.

Among the size groups, the shorter-term influence of long-term funds was larger than the long-term influence except for firms with assets over $50 million. In firms with assets of $50 - $100 million the shorter-term influence was 41% of the total while for the largest firms it was only 3%. Thus, only in the very largest firms was the function of long-term funds specialized to any great extent.

The influence of short-term funds on current assets.--Short-term funds were no more specialized according to their influence on current assets than long-term funds. Although their shorter-term influence predominated, of course, a considerable part of the efforts of short-term funds was expended on long-term influences on current assets. This would be expected in growing firms or industries which tend to maintain current ratios at any customary level. That is, if growing firms did not employ increasing levels of current liabilities, their current ratios would tend to rise.

Only in Primary Metals, Textiles, Tobacco, and the groups of firms with assets of $5 - $50 million, can the long-term influence of short-term funds be said to be negligible over the 11 years studied. Except for Tobacco, which financed inventory growth largely with other debt, these aggregates were among the slowest growing of the aggregates (see Table 10). Consequently there was relatively little need for external growth funds of any kind.

Among all the other aggregates, at least 14% of the influences of short-term funds on current assets were long-term, ranging up to 34% in Printing, 40% in Petroleum Refining and the group of largest firms, and 48% for Electrical Machinery. Thus the conclusion in this section, as in the last, would have to be that short- and long-term funds do differ in their primary functions for the obvious reasons suggested by traditional theory but that, contrary to traditional theory, they generally perform important secondary functions, too.

Results: Individual Firms

Once again the individual firms support the conclusions based on aggregate data while indicating that the components of the aggregates

tend to be so highly diversified that one must be careful when assuming any degree of homogeneity within a given industry. Table 9 contains the results of the analysis of the 20 individual firms. Since they reveal no new conclusions the comments here are brief.

There are no substantial differences between the aggregate and sample data with respect to proportions of total influences on current assets coming from short- and long-term funds. Short-term funds have a clear edge but in half the firms the total influence of long-term funds is well over 20%, reaching 30% or more in eight of them. In only four firms is the influence of long-term funds below 10%, including one interesting case (Firm 17) in which long-term funds did not even provide all the influences on fixed assets.

In nine of the firms, short-term funds furnished one-third or more of the long-term influences on current assets. Short-term debt provided all the long-term influences on current assets plus a considerable amount on fixed assets in Firm 4. However, in the four firms in which the actual dollar amount of current liabilities declined over the period, long-term funds provided all the growth of current assets. The long-term influence of short-term funds was less than 10% in only six of the firms and these six firms varied widely with respect to industry characteristics and amount of current-liability financing used.

The shorter-term influence of long-term funds on current assets was less than 10% in 12 of the 20 firms. In five of these 12 the shorter-term influence of long-term funds did not account for all the shorter-term movement in fixed assets, leaving it up to current liabilities to furnish all the shorter-term influences on current assets and make up the deficiency with respect to fixed assets. Perhaps this

is due to the fact that the four industries sampled were among those in which long-term funds exerted the least shorter-term influence, as indicated in Tables 6 and 8. And yet, even under these circumstances, which are most unfavorable to the present argument, in the majority of firms the influences of long-term funds on current assets were not exclusively long-term.

All of the foregoing has been devoted to the proportion of influences on current assets coming from short- and long-term funds. This part concludes, as did the previous one, with brief comments on the division of the influences of each of these sources on current assets into their shorter- and long-term components.

In half the 20 firms, the shorter-term influence of long-term funds on current assets was 40% or more of the total influence of long-term funds on current assets. A similar result with respect to the aggregates was noted earlier. None of the statistical evidence indicates that the function of long-term sources of funds was limited to providing long-term increases in firm size or to financing only fixed-asset requirements. Instead, the data indicate that a satisfactory analysis of the fluctuating margin of current assets should include the influence of long- as well as short-term sources of funds.

This fluctuating margin is the result of many influences other than the regular ebb and flow of seasonal and temporary current-asset needs due to changing sales levels as depicted in the parts of traditional theory which describe the role of current-liability financing. The influences of changing levels of net income, depreciation, debt repayments, securities issued, and fixed-asset purchases are among those

listed by Guthmann and Dougall when discussing working capital changes (15, p. 82) rather than current-liability financing.

Moreover, the sample and aggregate data concur in that short-term sources often, but not always, have considerable long-term influence on current assets as well as shorter-term influence on fixed assets. This is simply to say that in a growing or declining firm, the level of current liabilities generally may be expected to grow or decline, too, and that, usually, current liabilities do not fluctuate between a seasonally high amount and some low level at or near zero. A detailed analysis of the minimum or permanent level of current liabilities is presented in Section 4.5 of Chapter IV.

3.6 The Effects of Differing Financial and Economic Characteristics on the Use of Current Liabilities: Principal Results of Chapter III

Purpose

In the preceding analysis a large amount of data has been accumulated which indicates that both industries and individual firms differ widely in their use of current-liability financing. Probably the reasons for these differences are complex. A thorough analysis of them would involve an intensive investigation well beyond the intended scope of this study.

It is desirable, however, to attempt to find out if any obvious relationships exist between the use of current-liability financing and some of the basic financial and economic characteristics of the groups of manufacturing corporations studied. An absence of such relationships leads toward the conclusion that the use of current-liability financing is largely a matter of historical accidents which might not recur. Such a conclusion would partially undermine the idea that

current liabilities are important and continuing alternative sources of funds which should be considered in managements' decisions regarding long-run financing.

On the other hand, if the use of current liabilities is completely determined in a straightforward manner by one or a few of the variables affecting a firm's financial structure, then perhaps the idealized traditional view of current-liability financing is not so far off the mark. The purpose of this section, then, is to investigate whether the use of current liabilities has determinants other than historical accident, whether it is completely determined by a few of a firm's financial and economic circumstances, or whether the use of current-liability financing is a matter deserving the full consideration management accords the use of other sources of funds.

Table 10 contains the quantitative results of the analysis, which covers the eleven-year period from 1952 through 1962. The results are calculated as average relationships over the period, in most cases, and are discussed below under headings denoting each of the eight basic characteristics analyzed and the method of calculating the results. Abbreviations are from the list in Section 3.3.

This section concludes with a summary of the principal results of Chapter III and comments on the determinants of the level of current-liability financing in a given firm.

Results

Profitability (NP as % TA).--There appears to be little direct relationship between the profitability of an industry and its use of current-liability financing. Petroleum Refining and Primary Metals

TABLE 8--SOURCES OF QUARTER-TO-QUARTER INFLUENCES ON THE TOTAL DOLLAR AMOUNT OF CURRENT ASSETS IN SELECTED GROUPS OF MANUFACTURING CORPORATIONS
MARCH 31, 1952 - MARCH 31, 1963

Industry or Size Group	Proportion of Total Dollar Influences on Current Assets		Proportion of Influences Resulting in Net Growth/(Decline)		Proportion of Non-Growth/(-Decline) Influences	
	L-T Funds	S-T Funds	L-T Funds	S-T Funds	L-T Funds	S-T Funds
Durable Goods Industries	48.2	51.8	67.0	33.0	32.7	67.3
Electrical Machinery	48.5	51.5	62.9	37.1	19.1	80.9
Furniture	47.2	52.8	53.3	46.7	45.4	54.6
Lumber	35.2	64.8	24.0	76.0	37.1	62.9
Motor Vehicles	17.6	82.4	62.6	37.4	(3.5)	103.5
Other Metal Products	33.4	66.6	70.6	29.4	12.6	87.4
Primary Metals	24.2	75.8	101.1	(1.1)	2.4	97.6
Stone, Clay, Glass	3.9	96.1	70.4	29.6	(104.4)	204.4
Nondurable Goods	48.4	51.6	63.3	36.7	38.7	61.3
Apparel	26.0	74.0	36.1	63.9	23.7	76.3
Chemicals	35.3	64.7	76.2	23.8	4.9	95.1
Food	16.8	83.2	61.8	38.2	4.2	95.8
Paper	36.5	63.5	72.8	27.2	16.9	83.1
Petroleum Refining	33.7	66.3	38.0	62.0	30.5	69.5
Printing	38.3	61.7	53.6	46.4	25.9	74.1
Rubber	42.3	57.7	66.0	34.0	17.9	82.1
Textiles	26.0	74.0	78.0	22.0	24.6	75.4
Tobacco	22.2	77.8	76.6	23.4	13.1	86.9
All Manufacturing Corps.	38.9	61.1	65.5	34.5	0.7	99.3
TA Under $1 Million	36.4	63.6	21.6	78.4	39.4	60.6
TA $1 - $5 Million	28.9	71.1	44.3	55.7	24.6	75.4
TA $5 - $10 Million	40.5	59.5	71.5	28.5	35.9	64.1
TA $10 - $50 Million	40.5	59.5	116.2	(16.2)	27.5	72.5
TA $50 - $100 Million	45.5	54.5	78.2	21.8	28.6	71.4
TA Over $100 Million	43.8	56.2	65.8	34.2	3.5	96.5

Explanatory notes: See Section 3.5, "Calculations." Source: Compiled from data listed in Section 2.6.

TABLE 9--SOURCES OF QUARTER-TO-QUARTER INFLUENCES ON THE TOTAL DOLLAR AMOUNT OF CURRENT ASSETS IN SELECTED INDIVIDUAL MANUFACTURING CORPORATIONS
MARCH 31, 1952 - MARCH 31, 1963

Industry or Firm	Proportion of Total Dollar Influences on Current Assets		Proportion of Influences Resulting in Net Growth/(Decline)		Proportion of Non-Growth/(-Decline) Influences	
	L-T Funds	S-T Funds	L-T Funds	S-T Funds	L-T Funds	S-T Funds
Electrical Machinery	48.5	51.5	62.9	37.1	19.1	80.9
Firm 1.	33.4	66.6	66.5	33.5	0.0	100.0
Firm 2.	9.4	90.6	94.2	5.8	1.8	98.2
Firm 3.	43.1	56.9	75.2	24.8	30.5	69.5
Firm 4.	10.8	89.2	(145.5)	245.5	8.4	91.6
Firm 5.	10.9	89.1	227.1	(127.1)	2.0	98.0
Food	16.8	83.2	61.8	38.2	4.2	95.8
Firm 6.	33.4	66.6	97.2	2.8	19.5	80.5
Firm 7.	34.5	65.5	124.1	(24.1)	29.9	70.1
Firm 8.	18.5	81.5	49.9	50.1	(7.1)	107.1
Firm 9.	2.7	97.3	53.9	46.1	(1.8)	101.8
Firm 10.	12.7	87.3	25.6	74.4	11.7	88.3
Primary Metals	24.2	75.8	101.1	(1.1)	2.4	97.6
Firm 11.	43.6	56.4	94.6	5.4	26.9	73.1
Firm 12.	26.6	73.4	118.8	(18.8)	16.5	83.5
Firm 13.	30.6	69.4	104.0	(4.0)	9.1	90.9
Firm 14.	23.0	77.0	94.4	5.6	0.9	99.1
Firm 15.	6.6	93.4	126.3	(26.3)	(5.1)	105.1
Chemicals	35.3	64.7	76.2	23.8	4.9	95.1
Firm 16.	11.4	88.6	10.1	89.9	11.4	88.6
Firm 17.	(11.0)	111.0	95.9	4.1	(73.8)	173.8
Firm 18.	30.8	69.2	97.5	2.5	(11.5)	111.5
Firm 19.	16.6	83.4	43.0	57.0	8.7	91.3
Firm 20.	36.9	63.1	62.4	37.6	19.7	80.3

Explanatory notes: See Section 3.5, "Calculations." Source: Compiled from data listed in Section 2.6.

were among the most profitable industries and used relatively small amounts of current liabilites. Chemicals and Stone, Clay, Glass also were among the most profitable industries and used average amounts of current liabilities. Motor Vehicles and Electrical Machinery were two other profitable industries and both of them used large amounts of current-liability financing.

There is a much stronger connection between profitability and asset size--as there is between use of current liabilities and asset size. Without trying to define causal relationships, it is evident that as firm size increased, profitability increased and the CL/TA ratio fell (Table 4). The data suggest that the more profitable firms may use less current-liability financing at least partially because their size is larger rather than just because of differing industry characteristics. Perhaps in a given industry, profitability promotes both size and access to the organized capital markets, which reduces the need for comparatively large amounts of current-liability financing.

Fixed-capital intensity (FA/TA).--The FA/TA ratios indicate that the inverse relationship between use of current liabilities and firm size, just discussed, is more than a matter of better access to long-term funds by larger firms. Fixed-capital intensity varied directly with firm size, meaning that larger firms used higher proportions of fixed assets in their production processes. Since their current asset requirements were correspondingly less, it may be assumed that their need to use current-liability financing was also less than that of smaller firms. The industry figures, too, indicate that higher degrees of fixed-capital intensity generally were associated with lower current liability utilization.

Asset turnover (Sales/TA).--The data indicate definite, though perhaps not straightforward, relationships between the rate of asset turnover, the degree of fixed-capital intensity, relative use of current liabilities, firm size, and profitability.

Industries which used more current and less fixed assets tended to have higher asset turnover and use more current-liability financing. Asset turnover varied inversely with asset size, as did use of current liabilities, while fixed-capital intensity and profitability varied directly with asset size. In all cases, the relationships between the four variables and asset size were nearly perfect in the sense that there are few if any exceptions to the direction of variation in the data.

Basic cash flow (NP+D&D as % sales; as % CL; and as % TD.)--Annual basic cash flow, defined as the sum of (1) net profits after taxes, plus (2) depreciation, plus (3) depletion, is largely a function of profitability and the use of fixed assets, both of which were discussed above. Since profitability and fixed-capital intensity increased with asset size, basic cash flow did too, whether it is evaluated with respect to sales, use of current liabilities, or use of total liabilities.

These relationships confirm, without adding to, what has been said elsewhere. They indicate more clearly than the others, however, that insofar as basic cash flow is a primary determinant of ability to carry debt, the smaller firms which use the most current-liability financing incur the most risk in so doing. Moreover, even though relative use of total debt did not vary with firm size, except that the group of smallest firms was by far the most heavily indebted (Table 4), ability to carry all kinds of debt increased as firm size increased.

Trading on the equity (OD/NW, TD/NW, TD/TA).--The three ratios studied in Section 3.3 and listed in Table 4 are also ratios, or their complements, which measure the degree of trading on the equity at least in part. The discussion concerning them includes much of what otherwise would be said here. It is significant that they confirm (1) the relatively heavy indebtedness of the smallest firms on both short- and long-term account and (2) the fact that, aside from this one exception, the relative degree of trading on the equity was not a function of asset size. However, the form of leverage funds was a function of asset size with the proportion of long-term debt increasing and short-term debt decreasing as both asset size and fixed-capital intensity increased. (Separate figures for preferred stock are not available in the Report (39). This prevents calculation of an overall measure of the degree of trading on the equity, which is defined in Chapter VI, Section 6.3, as the ratio of all sources of funds which earn a limited return to total assets. (It seems likely that inclusion of preferred stock would reinforce these conclusions.)

Liquidity (Cash + AR as % CL).--Of all 25 aggregates, only the Tobacco industry failed to keep average liquid assets at least equal to average current liabilities in the period studied. This situation in Tobacco was more the result of low levels of cash and accounts receivable than high levels of current liabilities. Although current assets were relatively high in Tobacco, this was due to huge leaf inventories which were financed with large amounts of intermediate- or long-term debt, Tobacco being the number one user of these forms of financing in terms of the OD/TA ratio among the groups of firms studied.

In general, industries with the most current assets also had the most current liabilities and were the least liquid. In the size groups, too, liquidity increased rapidly as the proportions of both current liabilities and current assets fell (fixed assets rose). Liquidity reached a peak in firms with $5 - $10 million in total assets and leveled off with further increases in asset size except for the group of largest firms. The largest firms, those with assets over $100 million, had lower stocks of liquid assets, proportionately, than any firms except those with assets of $5 million or less. However, the largest firms were by far the most liquid on a cash flow basis, as indicated under "Basic cash flow" above.

Growth (1962 Sales as % of 1952 Sales).--Relationships between growth and the other variables studied in this section are elusive, at best. Durables grew somewhat more as a group than nondurables. But doubts are cast on the significance of the 8% difference between them (160% - 152%) by the figures for the industries. The only clear relationship between growth and the other variables is with respect to asset size. Growth declined as asset size increased to $50 million and then increased rapidly for firms over $50 million.

This pattern is unlike any observed thus far and reveals no apparent connection between the amount of growth and sources of funds used to finance it. However, it is interesting to note that the growth of only those firms with assets over $50 million is of the same order of magnitude as the growth of most industries; relative growth of smaller firms is well below that of many industries.

The contribution of the three major sources of funds to growth was examined in Sections 3.4 and 3.5. It was concluded that long-term

funds furnish the bulk of growth funds but that more often than not current liabilities provide significant amounts, too. The results in this part lead one to believe that the reason the contribution of current liabilities to growth was not higher is because smaller firms, which use the most current-liability financing, are the firms which grew the least, even in relative terms.

Stability (V of sales; V of cash flow).--(1) Stability of sales and cash flow did not depend on whether durables or nondurables were produced, during the period studied. (2) Sales were more stable than basic cash flow in all 25 aggregates. (3) The pattern of stability among the size groups is identical to the pattern of growth.

These are the primary conclusions from the data on stability. Interestingly, they point to growth as an important form of instability when measured by V: a high rate of growth increases the standard deviation of a series and thus its V. However, probably few analysts would contend that instability resulting from a high growth rate is necessarily an evil, even with respect to such stability-sensitive areas as ability to repay debt.

More often than not, when instability is considered a source of risk it is the downward movements that are thought dangerous. Since V does not distinguish between downward instability and other kinds, a limitation in the context of the firm's ability to repay debt, further discussion of this point is postponed until Chapter IV wherein secular, seasonal, and cyclical variations in the use of current-liability financing are discussed explicitly.

Summary.--Two central ideas emerge clearly from the analysis in this chapter. First, current liabilities are not limited by size or

function to financing only the small fluctuating margin of current assets. Instead, their quantitative characteristics usually are comparable to those of other debt and/or net worth in terms of the measures used in the preceding analysis. Second, both the aggregates and the individual firms differ widely with respect to the use of current-liability financing.

In this final part of the chapter, the other important results and conclusions of the analysis are listed in the form of 20 propositions. They are followed by summary comments about the causes of differing usage of current-liability financing.

1. All sets of aggregate data indicated substantial use of current-liability financing during the eleven years studied. Among the 16 industries, the average CL/TA ratio ranged from 12% to 41% compared with 6% to 19% for OD/TA and 53% to 73% for NW/TA.

2. Use of current liability financing varied inversely with firm size. The average CL/TA ratio was 33% for the smallest firms and 20% for the largest. Use of other debt varied directly with firm size. Relative use of net worth, and hence total debt, was insensitive to firm size except with regard to the heavily indebted group of firms with total assets under $1 million.

3. The proportion of total assets financed by current liabilities was not especially variable through time on a comparative basis. Differences in the ranges of the CL/TA, OD/TA, and NW/TA ratios were not outstanding. In terms of the coefficient of variation (V) of the three quarterly ratios, CL/TA most often fell between NW/TA, which was by far the least variable, and OD/TA, which was the most variable.

4. The results of the analysis of the 20 individual firms confirmed the above propositions and indicated substantial differences between firms with respect to all measures considered.

5. A summary proposition based on the analysis in Section 3.3 is: there is no reason for financial theory to exclude current-liability financing from consideration as an important and continuing alternative source of funds by virtue of relative amounts used or variability of those amounts.

6. Current liabilities were responsible for a higher proportion of total influences on total assets than other debt in all 25 aggregates and furnished less than 30% of the total in only one (Petroleum Refining).

7. Net worth was the predominant source of long-term influences but current liabilities provided 10% or more of all such influences on total assets in 20 of the 25 aggregates and exceeded other debt in nine of them.

8. Current liabilities furnished the bulk of shorter-term influences on total assets but long-term funds were responsible for at least 20% of them in 17 of the aggregates.

9. Long-term funds were responsible for at least one-fourth of the total influences on current assets in 20 of the 25 aggregates.

10. The influence of long-term funds on current assets was primarily long-term. However, at least 20% of the long-term influences on current assets was provided by short-term funds in 23 of the 25 aggregates.

11. The influence of short-term funds on current assets was primarily shorter-term. However, long-term funds furnished at least 10% of the shorter-term influences in 18 of the 25 aggregates.

12. The sample firms tended to support these propositions, again with large differences between them.

13. A proposition summarizing the results of Sections 3.4 and 3.5 is: long- and short-term funds are not nearly so functionalized in terms of the kinds of influence exerted on assets as implied by traditional theory, providing substantial shorter- and long-term influences respectively.

14. There was little direct connection between the profitability of an industry and its overall use of current liabilities. However, profitability varied directly with firm size and, therefore, it also varied inversely with the relative amount of current-liability financing used.

15. The degree of fixed-capital intensity varied inversely with the use of current liabilities, i.e., the use of current liabilities and current-asset requirements varied directly. In addition, the degree of fixed-capital intensity varied directly with firm size.

16. Asset turnover varied inversely with fixed-capital intensity, inversely with profitability, inversely with firm size, and, therefore, directly with use of current liabilities.

17. Basic cash flow was a co-function of profitability and fixed-capital intensity (use of depreciable assets) and varied directly with both. It also varied directly with firm size and, hence, inversely, with use of current liabilities.

18. Liquidity varied directly with firm size, fixed-capital intensity, and profitability, except for the group of largest firms. It varied inversely with asset turnover, use of current liabilities, and use of current assets.

19. The amount of growth and the stability of both sales and basic cash flow appeared to be determined by exogenous factors as well as those studied.

20. These same exogenous factors, including, interalia, product demand and supply, prices, production functions, and degree of competition, also determine at least partially the behavior of some of the variables discussed in the foregoing propositions.

The analysis in Chapter III suggests it is plausible to expect that the relative use of current-liability financing is greatest when the firm is small and tends to decline as the firm grows. With growth, firms tend to become more profitable. They also tend to use proportionately more fixed capital and less current capital. Asset turnover declines. These factors lead to both a reduced need for short-term funds and greater availability of long-term funds.

As the growth process continues, both sales and cash flow become less subject to the risk of instability but only up to a point. When the firm has grown to upwards of, say, $50 million in total assets, it may become a large enough factor in its industry to become increasingly subject to variability in sales and basic cash flow. By the time firms reach this size, however, they are better able to withstand downward instability as a result of their extraordinary profitability and liquidity; then growth may proceed apace.

At no point does size, per se, become a factor limiting the use of current-liability financing to some relatively insignificant level. Instead, one of the most important limiting factors appears to be the degree of fixed-capital intensity--the extent to which fixed assets are substituted for current assets. Even in the more oligopolistic, profitable, and fixed-capital intensive industries, however, the industry wide use of current-liability financing is significant.

The evidence, especially that which indicates large differences among both aggregates and individual firms, suggests strongly that the variables discussed above are mutually determined by variables not yet considered. Does profitability cause growth or is it the result of growth? Does a high degree of fixed-capital intensity cause profitability or does growth afford the opportunity to utilize fixed assets more efficiently? To what extent do any of these variables determine the level of current-liability financing? Obviously the explanation in the preceding paragraphs is superficial, leaving out some of the more fundamental cause and effect relationships and ignoring feedback or reciprocating relationships among the variables.

Any comprehensive analysis of the causes of variations in levels of current-liability financing must look at the firm as an organic whole which exists in an environment consisting of such fundamental variables, or parameters, as industry and firm demand and supply, money and capital market conditions, the attitudes and skills of management, and the available range of technological processes.

The variables usually analyzed in connection with financial questions are surrounded in the real firm by these fundamental factors

in a viable system with continuous action and reaction. Figure 8, following, is itself perhaps only one step removed from superficiality. But it focuses attention on the interaction between managerial, technical, economic, and financial factors which occurs in most business firms. Figure 8 is intended to illustrate the point that the use of short-term debt, or any other source of funds, is a joint product of multiple relationships and is determined along with other variables by a whole host of financial and non-financial considerations. It does not seem very edifying, therefore, to isolate short-term debt, the second largest continuing source of funds for many if not most manufacturing corporations, and treat it as unique because the individual components will be repaid or refunded within the completely arbitrary period of one year.

The foregoing discussion and the chart also suggest that financial theory must be more flexible if it is to apply to all profit-making business firms regardless of size or circumstances. The kind of analytic neatness that tends to isolate short-term debt from many of the factors depicted in the figure should be sacrificed in favor of a more general approach to the financial problems of the firm.

A more general approach may avoid some of the pitfalls outlined in Chapter I. For example, it is easy to imagine that the financial manager who always finances at least 20% of his assets with current liabilities and never more than 15% with other debt, hardly an unusual situation, would be perplexed by a body of thought that tells him: (1) current liabilities may be your most risky source of funds but they are automatically repaid; (2) use current liabilities only for

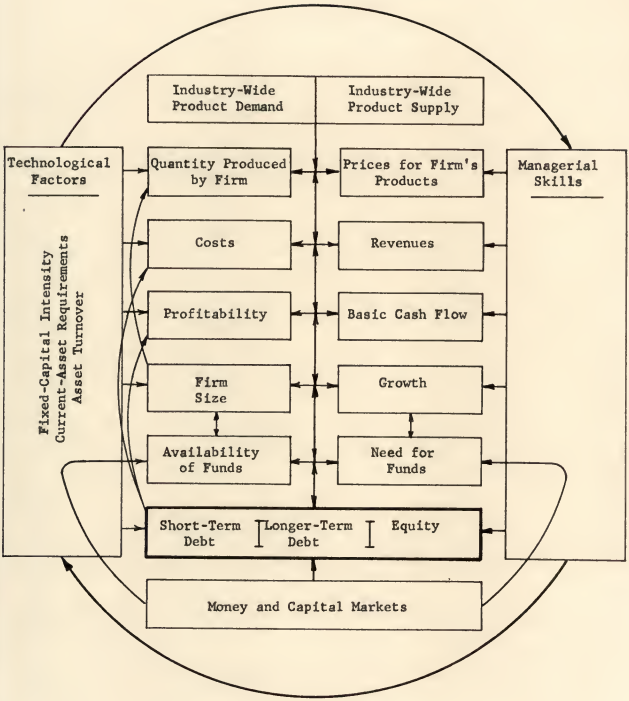

FIGURE 8--SOME RELATIONSHIPS BETWEEN THE MIX OF FUNDS AND OTHER BASIC FINANCIAL AND NON-FINANCIAL FACTORS AFFECTING THE FIRM

temporarily high current-asset requirements whether or not your firm can obtain additional funds elsewhere; (3) analyze your debt capacity mainly in terms of longer-term debt even though short-term debt may be more risky; (4) current liabilities, unlike other debt, do not represent trading on the equity or introduce leverage into your financial situation; (5) you should consider using some longer-term debt because it is cheap but current liabilities have no bearing on average cost of capital unless, perhaps, they have explicit interest costs; and (6) debt due in two, five, or ten years will be repaid with earnings but current liabilities will be repaid by the liquidation of assets.

The role of current liabilities in a more general approach to financial theory is discussed in Chapters VI - VII.

TABLE 10--MEASURES OF SOME BASIC ECONOMIC AND FINANCIAL CHARACTERISTICS OF SELECTED GROUPS OF MANUFACTURING CORPORATIONS 1952 - 1962

Industry or Size Group	Profitability NP as % TA	Fixed-Capital Intensity FA as % TA	Asset Turnover Sales / TA	Basic Cash Flow NP + D&D as % Sales	Basic Cash Flow NP + D&D as % CL	Basic Cash Flow NP + D&D as % TD
Durable Goods Industries	6.5	40.7	1.4	7.3	41.1	28.3
Electrical Machinery	6.4	32.9	1.6	6.0	32.7	23.2
Furniture	5.1	29.5	2.1	3.8	29.5	23.0
Lumber	4.5	48.6	1.4	7.1	50.0	30.4
Motor Vehicles	9.0	42.7	1.6	8.2	47.7	37.4
Other Metal Products	5.4	36.5	1.6	5.4	36.5	25.7
Primary Metals	6.1	54.8	1.1	10.1	63.4	33.2
Stone, Clay, Glass	8.2	53.2	1.2	11.3	76.9	47.2
Nondurable Goods	6.8	50.3	1.5	7.8	60.6	34.6
Apparel	3.6	17.2	2.7	2.0	13.2	11.4
Chemicals	8.5	51.7	1.2	11.5	77.8	42.3
Food	5.6	41.7	2.5	3.7	39.8	25.7
Paper	6.4	58.1	1.2	8.9	70.4	35.4
Petroleum Refining	8.4	68.4	0.8	17.6	120.3	53.4
Printing	6.0	38.5	1.7	5.4	35.8	22.3
Rubber	6.3	33.7	1.6	6.5	46.0	26.6
Textiles	3.4	39.3	1.5	4.4	31.5	21.4
Tobacco	7.2	11.6	1.4	5.6	36.8	19.8
All Manufacturing Corps.	6.6	45.4	1.4	7.5	49.2	31.2
TA Under $1 Million	4.0	34.5	2.5	3.4	25.9	19.6
TA $1 - $5 Million	4.8	34.2	2.0	4.2	30.6	23.8
TA $5 - $10 Million	5.7	36.0	1.7	5.4	37.7	27.8
TA $10 - $50 Million	6.2	38.5	1.5	6.4	42.4	29.0
TA $50 - $100 Million	6.3	43.7	1.4	7.0	47.7	29.1
TA Over $100 Million	7.5	50.9	1.2	10.1	61.1	35.3

TABLE 10--Continued

Industry or Size Group	Trading on the Equity: OD as % NW	TD as % NW	TD as % TA	Liquidity: Cash + AR as % CL	Growth: Sales '62 as % Sales '52	Stability: Coefficient of Variation: Sales	NP + D&D
Durable Goods Industries	18.2	58.4	36.9	119.2	160.0	15.0	20.1
Electrical Machinery	21.2	72.6	42.1	113.4	228.9	28.4	29.1
Furniture	11.8	53.0	34.6	140.0	135.1	13.5	26.5
Lumber	19.2	49.0	32.9	128.9	124.6	13.2	24.8
Motor Vehicles	12.0	55.5	35.7	111.6	162.4	18.0	33.7
Other Metal Products	15.5	52.6	34.5	126.3	157.4	14.4	18.9
Primary Metals	22.5	47.2	32.1	145.6	131.0	14.8	24.3
Stone, Clay, Glass	15.2	39.4	28.3	162.7	180.9	19.9	27.2
Nondurable Goods	20.8	48.6	32.7	137.3	151.9	14.7	20.3
Apparel	12.1	89.3	47.2	100.7	159.0	22.7	41.0
Chemicals	21.1	46.2	31.6	155.7	182.0	19.8	25.6
Food	19.9	56.4	36.1	116.4	137.3	11.9	20.8
Paper	22.3	44.9	31.0	152.9	178.3	17.3	19.2
Petroleum Refining	20.4	36.7	26.9	166.6	166.9	16.1	18.2
Printing	26.7	70.8	41.5	154.6	190.4	21.3	27.2
Rubber	27.8	65.8	39.7	149.3	185.3	22.5	26.4
Textiles	14.9	46.0	31.5	128.2	102.4	7.5	21.0
Tobacco	31.9	69.0	40.8	54.8	144.2	15.6	30.9
All Manufacturing Corps.	19.5	53.4	34.8	126.7	155.9	14.5	19.5
TA Under $1 Million	18.8	77.1	43.5	113.1	132.2	13.3	26.3
TA $1 - $5 Million	12.0	54.4	35.3	121.8	125.2	9.9	18.0
TA $5 - $10 Million	12.4	47.4	32.1	136.8	119.5	8.5	14.2
TA $10 - $50 Million	15.6	49.3	33.0	134.4	110.2	5.9	11.7
TA $50 - $100 Million	20.3	52.1	34.3	134.8	155.1	16.1	20.7
TA Over $100 Million	22.0	52.0	34.2	127.0	197.5	20.4	24.0

Explanatory notes: See Section 3.6. Source: Compiled from data listed in Section 2.6.

CHAPTER IV

THE COMPOSITION AND BEHAVIOR OF CURRENT-LIABILITY FINANCING

4.1 Purpose and Plan of This Chapter

Chapter III establishes the basic propositions that current liabilities provide substantial amounts of long- as well as shorter-term financing; that the overall variability of these amounts is not especially great compared with other sources of funds; that the underlying determinants of the level and behavior of current liabilities are the same as for other sources of funds; and that, in consequence, there are no apparent reasons for excluding current liabilities from long-run financial considerations on the basis of their comparative amounts or behavior.

Chapter IV focuses attention solely on current liabilities. Its purpose is to quantify and examine several important aspects of the composition and behavior of current liabilities as a separate source of funds, aspects which are not revealed by the comparative analysis

in Chapter III but which are prerequisite to an informed synthesis of current liabilities with other sources of funds in financial theory. First, the major components of current liabilities are evaluated in terms of their contribution to the total amount, their relative variability, and their functions of providing long- and shorter-term influences on total current liabilities. Second, the combined effects of the components are analyzed in terms of the kinds of variation present in the CL/TA ratio through time. Third, the kinds of variation found in total dollars of current liabilities are specified. And fourth, these variations are eliminated from current liabilities to determine the minimum or permanent levels of current-liability financing. Variations are also removed from current assets to find their permanent level.

Whatever permanent amounts of current liabilities and current assets are found to exist should be included in analyses of long-run financial matters. The role of permanent current liabilities and permanent current assets in long-run financial theory is considered in Chapters V - VII.

As in Chapter III, the discussion is presented in a semi-outline format with each analytic section except 4.2 divided into the five parts listed on page 49. No sample data are available for Section 4.2, which departs from the standardized format in several self-explanatory ways.

4.2 The Size, Variability, and Functions of the Components of Current Liabilities

Purpose

Total current liabilities is composed of several sources of funds which are not necessarily homogeneous with regard to size, variability, or function, as is true of other debt and net worth. The purpose of this section is to analyze and compare these three characteristics of each of the four major components of total current liabilities, namely, short-term bank loans, trade accounts payable, accrued taxes, and other current liabilities. The data are listed in Tables 11 and 12 at the end of this section.

This analysis provides empirical evidence for accepting or rejecting the traditional viewpoint which includes only interest-bearing short-term debt in certain areas usually reserved for long-term sources of funds, such as cost of capital.

Calculations

Calculations in this section are based on total current liabilities instead of total assets and the objects of analysis are the four large groups of current liabilities rather than the three major sources of funds. Otherwise, the computational methods are identical to those in Chapter III, Sections 3.3 and 3.4, as described in their respective parts headed "Calculations."

Short-term bank loans (STBL) are those loans from banks with original maturity of one year or less. Trade accounts payable (TACPA) include debts to suppliers evidenced by notes as well as open-book credit. Accrued taxes (ACTAX) consist of all taxes incurred but not paid. Other current liabilities (OTHCL) include long-term debt due

within one year, advances and prepayments from customers, wages and salaries payable, and all other current liabilities not included in the first three groups.

Results: Industries and Size Groups

Size and variability of short-term bank loans.--As a group, manufacturing corporations owed about 14% of their current debt to banks. The proportion was slightly smaller in durables (12%) and higher in nondurables (16%). In comparison, the other three sources of current liabilities all provided substantially more funds to manufacturing corporations, as discussed below.

The individual industries differed greatly in their use of short-term bank loans, with the ratios of bank loans to total current debt ranging from 2% in Petroleum Refining to 45% in Tobacco. Short-term bank loans were less than 10% of total current liabilities in six industries, from 10% to 20% in six, from 20% to 30% in three, and 45% in one.

In terms of the proportion of total assets financed with short-term bank loans, it was an almost insignificant source of funds for Petroleum Refining while in Tobacco it financed around 10% of total assets on the average during the eleven years studied. For manufacturing corporations as a whole, short-term bank loans provided around 3% of total assets (S-TBL/CL of 14% times CL/TA of 22%).

All asset size groups except those containing the very largest and smallest firms used short-term bank loans equal to 18% - 22% of current liabilities. Firms under $1 million used 15% and those over $100 million used only 9%. The small differences between the four

size groups from $1 million to $100 million indicate that the reliance of manufacturing firms on banks was usually determined more by industry characteristics than by firm size except at the extremes.

Short-term bank loans tended to be neither the most nor the least variable kind of current-liability financing. The coefficients of variation (V) of the aggregates ranged from 6% for firms under $5 million to 50% for Petroleum Refining. Among the industries, the V of six was from 10% to 20%, six more fell between 20% and 30%, and the remaining three other than Petroleum Refining fell between 30% and 35%.

There was a distinct association between firm size and the V of short-term bank debt. V increased progressively from 6% for firms under $5 million to 21% for firms over $100 million. This suggests that bank loans were a much more permanent source of funds for smaller firms than for larger ones. In addition, the V in many of those industries which used the most short-term bank loans was less than that in those which used little of this type of financing.

Size and variability of trade accounts payable.--Trade accounts payable was by far the largest and least variable source of current-liability financing for manufacturing corporations in general. All but one of the 25 aggregates (Tobacco) owed 25% or more of its current debt to suppliers. In contrast, only four of the aggregates owed this much to banks. Again by way of contrast, the V of short-term bank loans was less than 15% only in Apparel among the industries whereas the V of trade accounts payable was over 15% only in Tobacco. Tobacco was unusual in the additional respect that it was the only aggregate which received more funds from banks than suppliers. And Tobacco shared

with the $1 - $5 million size group the distinction of being the only aggregates to obtain financing with more regularity from banks than from suppliers.

The smallest firms were the heaviest users of trade credit, which constituted 54% of their current liabilities. However, all the other size groups used 30% to 40%, indicating that differences with regard to the use of trade credit were more a matter of industry than size characteristics except for the smallest firms. Petroleum Refining and Apparel illustrate the point that firm size didn't make much difference with regard to the proportion of current liabilities furnished by suppliers in that both used slightly over 50%. However the V for Apparel (3.7%) was much closer to that of the smallest firms (2.5%) than the V for Petroleum Refining (7.0%). Chemicals used only 35% trade credit even though average firm size and industry characteristics are similar to Petroleum Refining. The reason Petroleum Refining had such a high proportion of trade credit may be that, during the latter part of the period studied, credit competition among crude producers seeking refinery outlets under conditions of general over-supply tended to supplant price competition, which may not be very keen under the posted-price system.

As in the case of short-term bank loans, the variability of trade accounts payable was inversely related to the amount used. Apparently those industries which used large amounts financed continuing as well as temporary asset requirements with trade credit.

Size and variability of accrued taxes.--Accrued taxes are considered a source of funds in the present context in the sense that if taxes were paid daily, total assets would be lower. Although funds may

be earmarked for tax installments, at the very least these funds can serve as contingency balances while being accumulated. Since tax liabilities are unavoidable in profit-making business enterprises, they and the assets used for their payment should be retained in the analysis.

All the aggregates except six owed at least as much to the tax collector as to banks. (As expected, these six included some of the least profitable industries.) On the other hand, only Tobacco and Stone, Clay, Glass owed more to the government than to trade creditors.

Manufacturing corporations in general tended to have 15% to 25% of their current debt in the form of accrued taxes. Some of the more profitable industries were in the 30% to 35% range with a maximum in Stone, Clay, Glass of 41%. The size groups reflected the direct relationship between profitability and asset size; accrued taxes represented 10% of the current liabilities of the smallest firms and 25% of those of the largest firms.

The variability of accrued taxes was more striking than its size. In 18 of the aggregates, including all the size groups, accrued taxes was the most variable source of current liabilities. Accrued taxes was the second most variable category of current debt in five of the remaining seven aggregates. This variability resulted primarily from the relative decline in tax liabilities for many of the aggregates during the period studied, as indicated below:

Size and variability of other current liabilities.--Other current liabilities is a catch-all category consisting of all debts due within one year not included in the above three groups. In total this group was one of the larger and more stable sources of current-liability

financing. It provided more funds than short-term bank loans in 20 of the aggregates, including all but one of the size groups. Other current liabilities was less variable than accrued taxes in 20 of the aggregates and more variable than trade accounts payable in 23 of them. Generally, the overall variability of other current liabilities was on a par with that of short-term bank loans but, as shown in the next part, other current liabilities was a principal source of growth of total current liabilities while the influence of short-term bank loans was primarily shorter term.

Proportion of total influences on current liabilities.--The proportion of total influences exerted on total current liabilities by short-term bank loans varied widely among the industries, ranging from 4% in Stone, Clay, Glass to 62% in Food. Although the proportion was higher than for any of the other three groups of current liabilities in seven of the industries, it furnished the lowest proportion of influences in six others. Thus the use of short-term bank credit appears to be largely a policy matter. Its total proportionate influence tended to vary directly with the amount used.

Trade accounts payable was much less variable among industries. It exerted the most influence in three and the least in none. Differences in variability tended to follow differences in the amounts used, as in the case of short-term bank loans. The size groups confirm the importance of trade credit to firms with assets under $1 million and indicate that it exerted as much proportional influence on total current liabilities in firms with assets over $100 million as in those with assets of $1 - $5 million.

The relationship between accrued taxes and profitability is evident once more in the figures showing the proportionate influence of accrued taxes on total current liabilities. Accrued taxes almost always accounted for a higher proportion of influences than its proportion of dollars, thus confirming its relative variability. It exerted the most influence on total current liabilities in five of the 16 industries plus all of the size groups except the smallest firms and the least influence in only two industries.

The proportion of influences on total current liabilities exerted by other current liabilities was rarely as large as the proportion of dollars it represented. It provided the least overall influence in seven industries plus all size groups but one and the most influence in only one industry. Less than one-fourth of the total influence on current liabilities came from this source in 21 of the aggregates, the fact that it was usually second only to trade accounts payable in size notwithstanding.

Proportion of long-term influences on current liabilities.--The two largest and least variable sources of current liabilities, trade accounts payable and other current liabilities, provided the great majority of long-term influences on total current liabilities. It is interesting to note that the level and behavior of these two sources of funds is related more directly to the nature of the production process and the volume of products forthcoming than that of either short-term bank loans or accrued taxes. As industries grow, trade accounts payable and other current liabilities tend to grow along with the increase in sales but use of bank credit and taxes payable (profitability) may or may not increase. While the volume of sales probably

is the principal determinant of the use of trade credit and other current liabilities, the use of bank loans and the amounts of taxes payable are often related more directly to the level of basic cash flow generated by the firm. That bank loans and accrued taxes are the more marginal sources of current liabilities is supported by the fact that sales were less variable than basic cash flow in all 25 aggregates during the 11 years studied, as indicated in Section 3.6. Moreover, the use of bank credit and taxes payable is not as completely subject to the will of management as trade accounts payable and other current liabilities, both of which may be used at least semi-automatically given the disposition of management to do so. Evidently managements in general choose to use these two sources on a long-term basis.

The dollar amount of accrued taxes declined in 20 of the 25 aggregates over the period studied. Among the other five it provided no more than 13% of the growth of current liabilities except in the case of Primary Metals. Current liabilities declined by $38 million out of $4,263 million in Primary Metals while accrued taxes fell from $2,199 million to $952 million. This explains the "positive" contribution to "growth" of 3,282% listed under accrued taxes in Table 12. Accrued taxes also exerted large "positive" long-term influences on current liabilities in the groups of firms with assets from $10 million to $50 million for the same reason. In general, the long-term influences of accrued taxes may be characterized aptly as "counter-growth."

Short-term bank debt provided small to moderate amounts of long-term influence among the industries, furnishing the most such influences in none and the least in 11 of them. Accrued taxes provided the least long-term influence in all of the remaining five industries while

furnishing the most in two. Thus either short-term bank loans or accrued taxes contributed the least long-term influence in all of the 16 industries while either trade accounts payable or other current liabilities contributed the most in 14 of them.

Proportion of shorter-term influences on current liabilities.--The relative positions described in the preceding sentence are reversed with regard to proportionate shorter-term influence. Short-term bank loans accounted for the most such influence in six of the industries and accrued taxes contributed the most in nine of the remaining ten. Short-term bank loans also contributed the least such influence in five of the industries and accrued taxes did so in none. The least shorter-term influence was provided by other current liabilities in ten of the remaining 11 industries. Thus, shorter-term influences on current liabilities came first from accrued taxes, second from short-term bank loans, third from trade accounts payable, and fourth from other current liabilities.

Concluding remarks.--Presenting the analysis in terms of the number of industries in which a given source of current liabilities exerted the most or the least of a given kind of influence simplifies the analysis but neglects the sources which provided moderate influences. Consequently, it is helpful to tie the above observations together by describing briefly the functions of each source of funds with respect to its influences on total current liabilities.

The overall influence of short-term bank loans was mixed. When the influence was very large it tended to be of a shorter-term nature. Banks were the least important source of long-term influences on total current liabilities.

Trade accounts payable was an important source of long-term influences. Its shorter-term influence was more moderate.

Accrued taxes was the greatest source of shorter-term influences. It was also an important limiting factor on the growth of current liabilities but in all aggregates except two the decline in accrued taxes was more than offset by growth of the other three sources of current liabilities.

Other current liabilities was at least as important as trade accounts payable in providing growth funds. It exerted the least shorter-term influence of any of the four sources. The results summarized under this heading confirm those discussed earlier concerning the relative sizes and variability of the four large groups of current liabilities.

4.3 Measures of Historical Trend, Seasonal Variation, and Cyclical Plus Irregular Variation of the Ratio of Total Current Liabilities to Total Assets

Purpose

Chapter III and Section 4.2 have indicated the comparative size, variability, and functions of total current liabilities and its components on an average basis. The purpose of this section is to analyze in more detail the variability of the proportion of total assets financed with total current liabilities. Historical trend, seasonal variation, and cyclical plus irregular variation of the CL/TA ratio are quantified and compared for the 25 aggregates and 20 individual firms. The results are listed in Tables 13 and 14 at the end of this section.

TABLE 11--THE COMPOSITION OF CURRENT-LIABILITY FINANCING IN SELECTED GROUPS OF MANUFACTURING CORPORATIONS
1952 - 1962

Industry or Size Group	S-T Bank Loans % of Total	S-T Bank Loans Variability	Trade Accts. Payable % of Total	Trade Accts. Payable Variability	Accrued Taxes % of Total	Accrued Taxes Variability	Other Cur'nt Liabil. % of Total	Other Cur'nt Liabil. Variability
Durable Goods Industries	12.5	18.3	32.0	7.2	22.7	26.2	32.8	12.0
Electrical Machinery	12.8	28.0	27.8	14.0	18.6	29.4	40.8	6.9
Furniture	16.0	18.6	45.6	5.1	16.7	34.4	21.7	17.8
Lumber	18.1	16.0	40.5	8.2	17.0	31.9	24.5	24.7
Motor Vehicles	6.4	24.8	33.9	9.7	31.1	20.5	28.6	14.4
Other Metal Products	18.7	22.8	38.6	7.3	19.1	31.9	23.6	19.7
Primary Metals	5.3	32.2	37.0	7.4	33.1	20.7	24.6	19.8
Stone, Clay, Glass	7.6	33.2	33.2	10.4	40.7	79.0	18.5	165.9
Nondurable Goods	16.4	10.7	41.0	6.7	20.9	24.1	21.7	18.0
Apparel	24.7	12.2	52.7	3.7	7.0	21.6	15.6	13.1
Chemicals	8.3	30.1	34.8	11.1	35.4	17.9	21.4	20.6
Food	26.4	15.8	36.6	7.8	18.6	16.7	18.5	20.8
Paper	7.1	25.7	35.8	11.7	31.7	27.7	25.4	19.6
Petroleum Refining	2.4	50.3	54.2	7.0	15.9	43.5	27.5	17.8
Printing	13.8	18.9	41.5	6.9	18.5	19.9	26.2	20.1
Rubber	11.6	23.9	39.5	6.7	21.7	32.1	27.3	18.2
Textiles	27.1	17.5	38.7	5.9	14.9	34.0	19.2	17.4
Tobacco	44.9	25.5	18.5	44.4	24.4	14.7	12.3	36.7
All Manufacturing Corps.	14.2	11.1	35.8	7.0	21.9	25.3	28.1	13.0
TA Under $1 Million	15.3	5.6	54.5	2.5	10.1	30.1	20.2	15.3
TA $1 - $5 Million	22.3	5.5	39.7	6.2	16.9	31.3	21.2	17.6
TA $5 - $10 Million	22.1	9.8	33.0	5.7	21.8	32.2	23.1	20.0
TA $10 - $50 Million	21.4	10.9	30.5	7.3	23.2	28.7	25.0	16.4
TA $50 - $100 Million	18.1	13.6	30.4	8.2	23.6	23.8	27.8	18.3
TA Over $100 Million	9.3	20.9	33.0	9.5	25.1	23.5	32.5	10.7

Explanatory notes: See Section 4.2, "Calculations." Source: Compiled from data listed in Section 2.6.

TABLE 12--SOURCES OF QUARTER-TO-QUARTER INFLUENCES ON THE TOTAL DOLLAR AMOUNT OF CURRENT LIABILITIES IN SELECTED GROUPS OF MANUFACTURING CORPORATIONS
MARCH 31, 1952 - MARCH 31, 1963

Industry or Size Group	Proportion of Total Influences on Current Liabilities				Proportion of Influences Resulting in Net Growth/(Decline)			
	S-TBL	TACPA	ACTAX	OTHCL	S-TBL	TACPA	ACTAX	OTHCL
Durable Goods Industries	19.2	24.4	35.7	20.7	9.4	48.8	(26.5)	68.3
Electrical Machinery	18.2	20.7	29.3	31.8	19.4	42.4	(6.7)	44.8
Furniture	23.6	36.6	27.0	12.8	18.5	59.0	(34.9)	57.4
Lumber	17.4	34.8	21.8	25.9	26.3	49.5	(39.4)	63.6
Motor Vehicles	8.6	31.1	40.8	19.5	(0.1)	42.9	5.6	51.7
Other Metal Products	48.6	18.1	22.4	10.9	6.0	55.4	(42.6)	81.2
Primary Metals	9.3	31.4	44.4	14.8	(31.6)	(926.3)	3,281.6	(2,223.7)
Stone, Clay, Glass	4.3	5.9	49.6	40.1	19.6	57.4	(44.2)	67.1
Nondurable Goods	24.4	23.0	37.3	15.2	6.3	65.1	(23.9)	52.6
Apparel	49.3	34.9	7.1	8.7	23.1	51.5	2.5	22.9
Chemicals	23.0	21.7	45.2	10.1	(11.0)	82.3	(33.6)	62.3
Food	61.8	17.1	13.7	7.3	2.5	61.5	(10.2)	46.1
Paper	18.4	22.0	46.1	13.5	19.7	87.0	(86.1)	79.4
Petroleum Refining	10.9	38.8	22.6	27.8	(0.2)	69.4	(24.2)	55.0
Printing	35.4	23.6	19.1	21.9	20.2	29.7	0.9	49.2
Rubber	28.2	27.1	27.2	17.5	30.3	40.7	(27.5)	56.5
Textiles	48.6	19.5	16.4	15.6	163.2	444.7	(1,007.9)	500.0
Tobacco	52.9	17.1	21.0	9.0	(118.4)	155.2	12.6	50.6
All Manufacturing Corps.	16.9	25.0	40.4	17.7	8.0	55.8	(25.3)	61.5
TA Under $1 Million	20.4	41.3	20.9	17.4	9.5	57.5	(16.6)	49.6
TA $1 - $5 Million	27.1	28.3	30.4	14.3	17.7	75.5	(55.5)	62.2
TA $5 - $10 Million	25.6	21.8	33.8	18.9	29.3	82.1	(164.8)	153.4
TA $10 - $50 Million	24.6	22.1	38.9	14.4	(13.0)	(121.8)	455.2	(220.4)
TA $50 - $100 Million	24.2	19.3	38.3	18.2	(9.6)	70.8	(62.9)	101.7
TA Over $100 Million	14.5	27.3	37.0	21.1	6.9	48.2	(7.9)	52.8

TABLE 12--Continued

Industry or Size Group	Proportion of Non-Growth/(-Decline) Influences			
	S-TBL	TACPA	ACTAX	OTHCL
Durable Goods Industries	20.8	20.4	45.8	13.0
Electrical Machinery	17.8	13.8	40.6	27.7
Furniture	24.3	33.6	35.3	6.9
Lumber	16.2	32.8	30.3	20.8
Motor Vehicles	9.8	29.6	45.3	15.3
Other Metal Products	51.9	15.2	27.5	5.4
Primary Metals	9.2	29.2	51.8	9.7
Stone, Clay, Glass	3.8	4.3	52.7	39.3
Nondurable Goods	28.5	13.5	51.3	6.7
Apparel	53.1	32.5	7.7	6.6
Chemicals	26.8	14.8	54.2	4.2
Food	67.0	13.3	15.8	4.0
Paper	18.2	15.4	59.6	6.8
Petroleum Refining	13.3	31.3	34.1	21.2
Printing	39.7	21.8	24.3	14.1
Rubber	27.9	24.6	37.3	10.3
Textiles	48.0	17.5	21.1	13.3
Tobacco	58.1	12.9	21.3	7.7
All Manufacturing Corps.	18.8	18.3	54.8	8.1
TA Under $1 Million	22.5	38.2	28.2	11.1
TA $1 - $5 Million	28.3	22.0	41.7	8.0
TA $5 - $10 Million	25.4	19.0	42.8	12.8
TA $10 - $50 Million	23.8	19.1	47.7	9.5
TA $50 - $100 Million	27.1	14.9	47.0	11.0
TA Over $100 Million	16.6	21.8	48.9	12.7

Explanatory notes: See Section 4.2, "Calculations." Source: Compiled from data listed in Section 2.6.

If the hypothesis of this study[2] is true, the analysis will indicate that the CL/TA ratio does not proceed on a regular course from seasonal highs to levels at or near zero. Instead it will indicate that the fluctuating margin of the CL/TA ratio is fairly small in comparison with the size of the ratio itself and that current liabilities continuously finance proportions of total assets which are substantial despite the seasonal and cyclical variations that are found.

Calculations

All calculations include the 45 end-of-quarter dates starting March 31, 1952 and ending March 31, 1963. A least-squares trend line was computed for the quarterly CL/TA ratios for each of the 45 sets of data. The three measures of analysis, discussed individually below, are all calculated in terms of movements along or away from this trend line.

To facilitate comparisons between the 45 series of CL/TA ratios, each quarterly ratio is converted to a percentage of the corresponding quarterly value of the trend line of its series. The results for all 45 sets of data are then expressed in terms of percentages of their respective trend values except in the case of "historical trend," as indicated below.

Although the least-squares trend lines fit the series of CL/TA ratios better than any other straight lines, it may well be that non-linear trend lines or a combination of the two would fit better in certain instances. The great volume of computations involved militates

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[2]The hypothesis is stated on page 18.

against fitting different kinds of trend lines for each of the 45 series in this section plus the additional 45 in Section 4.4. Probably the results would not differ enough to affect the final conclusions. If there were significant differences in results depending on the use of linear or non-linear trend lines, the bias would be in a more conservative direction with the linear, i.e., least-squares, trend lines because variations would be larger than if better fitting non-linear trend lines were used.

Historical trend.--The historical trend of each series of 45 quarterly CL/TA ratios is measured in terms of the difference between the beginning and ending values of the least-squares trend line for that series. The difference between the trend value of the ratio on March 31, 1963 and March 31, 1952 is expressed as a percentage of the trend value on March 31, 1952. Thus "historical trend" represents the percentage increase or decrease in the trend value of the CL/TA ratio during the period studied.

For all further calculations in this section, each item of quarterly data in each series is divided by its respective trend value and expressed as a percentage of trend value. In this way, movements in the series other than historical trend are isolated in the form of deviations from 100% of trend value. To illustrate, suppose that in a given quarter the actual value of the CL/TA ratio were 25% and the calculated value of the trend line for that same quarter were 20%. The ratio, when expressed as a per cent of trend value is 25% divided by 20%, or 125% of trend. Hence, the sum of all variations in the ratio in that quarter, other than those due to historical or long-term movements, is 25%.

Seasonal variation.--Constructing the overall measure of seasonal variation used here involves four steps. First, each series is converted to a per cent-of-trend-value basis as described above. Second, these 45 values are averaged for each respective quarter. That is, the means of the per cent-of-trend values are determined for the 12 first-quarter figures and the 11 figures for each of the second, third, and fourth quarters. Thus for each series, four averages are computed, each indicating a quarterly mean per cent-of-trend value. Third, the difference between each of the four quarterly averages and 100% is calculated as a measure of the seasonal variation in each of the four quarters. In this analysis, as in the case of any properly constructed measure of seasonal variation, the sum of these differences is zero, indicating that seasonal variation exists only within a year but does not exist when viewing the year as a whole. Fourth, to summarize the degree of seasonal variation in each series during the entire period, an overall measure of seasonal variation is calculated by averaging the unsigned amounts of the four quarterly differences calculated in the third step. Thus the overall measure of seasonal variation is a measure of the average quarterly amount by which the series expressed in terms of per cent-of-trend values varies seasonally from the trend values, without regard to the direction of variation.

Cyclical plus irregular variation.--The numerical illustration started in "Historical trend" helps explain these calculations. One quarterly CL/TA ratio of 25% was divided by its corresponding trend value of 20%, yielding a per cent-of-trend value of 125%. Suppose that in computing seasonal variation it were found that the average per cent-of-trend value for the quarter under consideration were 110%,

indicating that in that particular series and in that particular quarter (first--fourth), the CL/TA ratio exceeds its trend value by an average of 10% for seasonal reasons. Since the total level of this ratio in this quarter is 125%, subtracting the 110% due to historical trend and seasonal variation leaves 15% of the value of the ratio due to cyclical plus irregular movements.

Cyclical plus irregular variation is thus calculated as the per cent-of-trend value of each CL/TA ratio minus the average or seasonal per cent-of-trend value for the corresponding quarter. In a given quarter it is the residual amount after eliminating both historical trend and seasonal variations. All 45 such cyclical plus irregular percentages for each series are averaged without regard to sign to arrive at an overall measure of cyclical plus irregular variation covering the entire period.

The results in this section are percentages of percentages. Again in terms of the numerical illustration, the original CL/TA ratio of 25% consists of three parts. First, the historical trend value is 20% as indicated by the value of least-squares trend line at the given point in time. Second, seasonal variation is 10% of trend value or 2% (2% = 10% of 20%). And third, cyclical plus irregular variation is 15% of trend value or 3% (3% = 15% of 20%). The total of these three kinds of variation is 25%, accounting for all of the original CL/TA ratio.

Results: Industries and Size Groups

Historical trend--There was a general decline in the proportionate use of current-liability financing during the period studied as shown by the fact that the historical trend of the CL/TA ratio was downward

in 17 of the 25 aggregates. Motor Vehicles decreased the most with the last trend value of 21.1% down 41.5% from the beginning trend value of 36.1%. Most of the 17 declining aggregates experienced decreases of 15% to 30% in the trend values of their CL/TA ratios.

Those aggregates which increased their relative use of current liabilities were mainly the ones which used comparatively large amounts throughout the period. For the most part they are the aggregates in which firms tend to be relatively small. Perhaps they lacked either the alternative external sources of funds or the basic cash flow with which to expand without relying heavily on short-term debt, in contrast to the faster growing industries and size groups having access to these sources of funds, as indicated in Chapter III.

The historical trend of the CL/TA ratio probably has little predictive value. An increasing trend obviously does not indicate that the CL/TA ratio should be expected to approach 100% in time. Nor does a decreasing trend portend the demise of current liabilities as a source funds. In fact, the main purpose of computing historical trend is to provide a common base from which to measure seasonal and cyclical plus irregular variation. Nevertheless, declining historical trends could produce doubts about the truth of the hypothesis of this paper unless explained satisfactorily.

There are five reasons why decreases in the historical trend value of the CL/TA ratio in the period studied are believed to lack predictive value.

First, the declines were not large in most cases. A ratio that started at, say, 30% and decreased by 20%, in fact ended up at 24%.

Declines of this magnitude could as well have been due to happenstance as to fundamental shifts in management's philosophy of current-liability financing.

Second, no industry exhibited a declining historical trend in the last five years of the period studied. This indicates that the CL/TA ratios were comparatively high in the early 1950's but by 1957 financial structures were readjusted. This notion is confirmed by the graphs of the industries' CL/TA ratios, many of which, especially in the durables sector, showed a sharp increase in 1952 followed by declines from 1953 through 1955 or 1956. The pattern of the graphs followed the upsurge in the general level of manufacturing activity which started in mid-1952 and suggests that many manufacturing corporations financed rapidly increasing sales with current liabilities at this time (3, p. 87).

Third, the declining relative importance of current-liability financing was greatest in the asset-size groups which had access to alternative sources of funds. Historical trend declined progressively from plus 20% in the group of smallest firms to minus 27% in the largest firms. The eleven years studied are ones in which larger firms financed considerable amounts of growth with funds generated internally and external funds in the form of longer-term debt (see page 16). The raw data for the size groups indicate that the composition of the financial structures of the larger firms has become more stable in recent years after adjusting to accomodate the increasing use of these two sources of funds.

Fourth, Section 4.2 indicates that the declining importance of current liabilities was due primarily to the decreasing relative importance of tax accruals. Since the early 1950's corporate profits and tax payments, while considerable, have not kept pace with corporate growth in terms of assets and sales (3, pp. 48-49). To the extent that this "profit squeeze" has become more moderate now, or at least stabilized, relatively low levels of accrued taxes would not be expected to cause further declines in the CL/TA ratio.

Fifth, there was little evidence of declining dollar amounts of total current liabilities except in three of the sample firms. On the contrary, as shown in the next section, the CL/TA ratios fell because generally rapid increases in the dollar amounts of current liabilities were exceeded by even greater increases in total assets.

In view of the above, the negative historical trends observed in this section are believed to be of minor importance. It is considered unlikely that financial managers will forego to any great extent in the foreseeable future the cost, availability, and timing advantages of current-liability financing. Although no further consideration is given historical trend in this section, its full effect is taken into account when the permanent levels of current liabilities are measured in Section 4.5. They are found to be large even after considering all effects of declining CL/TA ratios.

Seasonal variation.--The figures in Table 13 leave no alternative but to conclude that seasonal variation of the CL/TA ratios of the 25 aggregates was small without exception. Average quarterly seasonal variation was 2% or less of trend value in 18 aggregates and under 3% in all but Food (3.4%) and Tobacco(8.7%). Tobacco experienced maximum

average quarterly seasonal variation among the aggregates. With historical trend stable at, say, 22%, Tobacco's CL/TA ratio varied from slightly over 20% to slightly under 24% for seasonal reasons ($22\% \pm 8.7\% \times 22\%$).

The quarterly average CL/TA ratios for Tobacco, again illustrating the extreme of seasonality among the aggregates, were 110% of trend values in the first quarter, 90% in the second, 92% in the third, and 107% in the fourth. In Food, the ratios were, 100%, 94%, 101%, and 106%, indicating that the CL/TA ratios in Food were approximately 23%, 22%, 23%, and 24% excluding both variations due to historical trend, which was level in this case, and cyclical plus irregular variation.

Seasonal variation in all the size groups was very small, probably due in part to their heterogeneous nature. All size groups ranged from 0.6% to 1.0% except the group of largest firms in which the CL/TA ratios varied seasonally by 1.8% of their trend values per quarter on the average. The only apparent explanation for these differences is that the largest firms had the highest proportion of accrued taxes and used short-term bank credit much more for temporary requirements than any of the other size groups. Differences between the size groups were so small, however, that pure chance would explain most of them.

Since Food and Tobacco illustrate the outstanding examples of seasonality, it is entirely clear that current liabilities do not fluctuate between seasonal highs and seasonal lows at or near zero when viewed in terms of the quarterly proportion of total assets financed by current liabilities in large aggregates of manufacturing

corporations. Two of these limitations on the generality of this conclusion are removed in the subsequent analyses of individual firms and of dollars of current liabilities.

Cyclical plus irregular variation.--Average amounts of quarterly cyclical plus irregular variation of the CL/TA ratios of the 25 aggregates were larger than seasonal variations except in Food and Tobacco but the amounts were small, nevertheless. None of the 25 aggregates exceeded 8.1% (Motor Vehicles) and only eight were 5% or over.

The magnitudes of these variations in terms of the actual CL/TA ratios may be illustrated to good advantage by using the extreme example of declining historical trend and combined seasonal, cyclical, and irregular variation. Only two of the 25 aggregates had combined average quarterly variation exceeding 9%. They were Motor Vehicles (11%), which had the highest cyclical plus irregular variation and Tobacco (14%), which had the highest seasonal variation. Motor Vehicles is used for illustrative purposes because it experienced the greatest change in historical trend; the historical trend of Tobacco was nearly flat.

The historical trend value of the CL/TA ratios of Motor Vehicles declined from 36% to 21% in the 11 years studied. The 11% average combined quarterly variation and the 42% decline in trend value experienced by Motor Vehicles are quantified in terms of the actual CL/TA ratio in the following paragraph.

The presence of all causes of variation in their average degree, operating in the same direction at the same time, would cause the quarterly CL/TA ratio of Motor Vehicles to vary between extremes of

40% (beginning trend value plus 11% combined variation) and 19% (ending trend value minus 11% of trend value) according to the methods of calculation used in this analysis. In actual fact, the range of the CL/TA ratios for Motor Vehicles during the entire period varied from 39% to 20%, including variations due to historical trend. Excluding historical trend, the ratios varied between 31% and 25%, calculated as the mean ratio of 28% plus and minus 11% of the mean.

Although this degree of variation was considerable, there is no indication of a level of current liabilities approaching zero at any time for any reason. Current liabilities never furnished less than 20% of total assets in Motor Vehicles. (In comparison, other debt never provided much more than 10%.) Thus, even in the extreme case of variation of the CL/TA ratio, which involved an oligopolistic industry dominated by highly automated producers of durable goods, the proportion of current liabilities was substantial in every quarter.

Results: Individual Firms

All four industries sampled had declining historical trends. In no case, however, did the CL/TA ratios decline historically in all five individual firms in any of the four industries. Eight of the firms had increasing CL/TA ratios over the period. The 20 firms illustrate the wide varieties of experience within given industries with respect to long-term movements in the CL/TA ratio. Their diversity suggests that they will be a useful aid in indicating the order of magnitude of seasonal, cyclical, and irregular variations in the current-liability financing of manufacturing corporations in general.

Average quarterly seasonal variations of the CL/TA ratio exceeded 10% of trend value in only three of the 20 firms. Two of these were Food firms which used large amounts of current liabilities and the other was in Electrical Machinery. Except for these three firms, maximum seasonal variation was 6.1% in Electrical Machinery, 6.4% in Food, 9.7% in Primary Metals, and 7.6% in Chemicals. The sample firms confirm that seasonal variation in CL/TA ratios was indeed small, in general.

Cyclical plus irregular variation was much larger in individual firms than in the aggregates. All 20 firms exceeded all four FTC-SEC industries in this respect. However, in 14 of the firms, average quarterly cyclical plus irregular variation was less than 20% of trend value. The maximum was 46% in the Electrical Machinery firm that had the lowest CL/TA ratio.

Combined seasonal, cyclical, and irregular variation was under 20% of trend value in 12 of the 20 firms, indicating that the CL/TA ratios varied by less than one-fifth from quarter to quarter on the average. Combined variation was greatest in the Food firm that used the largest proportional amounts of current-liability financing. Although this combined variation was 57%, historical trend increased by 54% with the result that this firm financed at least 10% of its assets with current liabilities in all but three quarters during the period.

The results for the individual firms suggest that the CL/TA ratios do not fall to insignificant low levels for seasonal reasons. When the proportions of assets financed with current liabilities reach their lowest level it is the result of combined seasonal, cyclical, and

irregular variation. Even under these circumstances, however, it would probably be unusual to find that the CL/TA ratios are small enough to warrant disregarding the permanent nature of a part of current-liability financing.

4.4 Measures of Historical Trend, Seasonal Variation, and Cyclical Plus Irregular Variation of Total Dollars of Current Liabilities

Purpose

The purpose of this section is to analyze the behavior through time of the dollar amounts of total current liabilities used by the 25 aggregates and 20 individual firms. Variations in current liabilities themselves could differ from variations in the CL/TA ratios studied in Section 4.3 because changes in all accounts affect the level of the CL/TA ratio. Therefore, the conclusions of Section 4.3 should be only tentative until confirmed or denied by the behavior of total dollars of current liabilities. The data are listed in Tables 15 and 16 at the end of this section.

Calculations

All calculations are identical to those in Section 4.3 except that quarterly dollar amounts of total current liabilities are analyzed instead of CL/TA ratios.

Results: Industries and Size Groups

Historical trend.--All aggregates increased their use of current-liability financing in terms of trend values of dollar amounts during the period studied except the group of firms with assets from $10 million to $50 million, which remained constant. In 20 of the 25

TABLE 13--MEASURES* OF HISTORICAL TREND, SEASONAL VARIATION, AND CYCLICAL PLUS IRREGULAR VARIATION OF THE RATIO OF CURRENT LIABILITIES TO TOTAL ASSETS IN SELECTED GROUPS OF MANUFACTURING CORPORATIONS MARCH 31, 1952 - MARCH 31, 1963

Industry or Size Group	Trend First Value	Trend Last Value	Measure of Historical Trend	Measures of Seasonal Variation: First Qtr.	Second Qtr.	Third Qtr.	Fourth Qtr.	Overall Seasonality	Cyclical + Irregular Variation
Durable Goods Industries	29.3	22.0	(24.7)	100.5	99.2	99.2	101.1	0.8	3.9
Electrical Machinery	35.9	25.2	(29.6)	100.7	98.3	100.1	101.0	0.9	5.1
Furniture	25.3	28.4	12.3	101.2	98.7	100.5	99.5	0.9	4.6
Lumber	19.5	20.5	4.8	98.7	100.0	101.9	99.5	0.9	5.1
Motor Vehicles	36.1	21.1	(41.5)	101.3	98.0	96.4	104.9	2.9	8.1
Other Metal Products	25.9	22.9	(11.9)	100.0	102.6	100.7	96.8	1.6	4.1
Primary Metals	21.0	13.2	(37.0)	100.6	97.8	99.5	102.2	1.4	5.9
Stone, Clay, Glass	20.1	15.2	(24.4)	98.4	97.7	101.9	102.2	2.0	4.1
Nondurable Goods	19.6	17.9	(8.9)	100.3	96.7	101.0	101.9	1.6	3.7
Apparel	34.7	45.6	31.5	98.8	100.6	105.3	95.5	2.9	2.8
Chemicals	19.6	15.2	(22.4)	100.7	96.3	99.2	103.9	2.3	6.0
Food	23.5	23.1	(1.5)	99.6	93.7	100.6	106.1	3.4	3.1
Paper	18.1	13.5	(25.3)	99.1	97.0	101.8	102.3	2.0	5.2
Petroleum Refining	13.1	11.0	(16.2)	100.1	97.2	100.7	102.1	1.4	4.1
Printing	25.3	26.2	3.4	97.2	97.4	103.3	102.4	2.8	3.0
Rubber	24.8	21.4	(13.6)	102.9	99.2	98.4	99.2	1.5	4.2
Textiles	19.3	23.4	21.2	101.5	101.5	101.8	95.1	2.4	4.4
Tobacco	21.7	22.2	2.4	109.8	89.9	92.2	107.3	8.7	5.2
All Manufacturing Corps.	24.5	20.0	(18.3)	100.4	98.3	99.9	101.4	0.9	3.6
TA Under $1 Million	29.8	35.7	20.1	98.9	99.6	101.6	100.0	0.8	2.8
TA $1 - $5 Million	25.7	29.2	13.7	100.0	99.6	101.1	99.3	0.6	4.0
TA $5 - $10 Million	24.1	23.2	(3.8)	99.9	98.8	101.1	100.2	0.7	5.1
TA $10 - $50 Million	24.7	20.5	(16.8)	100.2	98.8	100.6	100.3	0.6	4.2
TA $50 - $100 Million	23.5	18.8	(20.1)	100.4	98.1	100.4	101.2	1.0	4.6
TA Over $100 Million	23.2	17.1	(26.6)	101.1	97.6	98.8	102.5	1.8	3.9

*The first two columns are trend values of CL/TA ratios. Remaining columns are percentages of trend values.

Explanatory notes: See Section 4.3, "Calculations." Source: Compiled from data listed in Section 2.6.

TABLE 14--MEASURES[a] OF HISTORICAL TREND, SEASONAL VARIATION, AND CYCLICAL PLUS IRREGULAR VARIATION OF THE RATIO OF CURRENT LIABILITIES TO TOTAL ASSETS IN SELECTED INDIVIDUAL MANUFACTURING CORPORATIONS MARCH 31, 1952 - MARCH 31, 1963

Industry or Firm	Trend Line		Measure of Historical Trend	Measures of Seasonal Variation					Cyclical + Irregular Variation
	First Value	Last Value		First Qtr.	Second Qtr.	Third Qtr.	Fourth Qtr.	Overall Seasonality	
Electrical Machinery	35.9	25.2	(29.6)	100.7	98.3	100.1	101.0	0.9	5.1
AVGQR of Sample[b]	26.3	29.5	12.3	99.0	98.5	102.0	100.6	1.3	5.2
A of R of Sample	40.0	28.7	(28.4)	100.5	98.2	100.6	100.8	0.9	5.6
Firm 1.	4.7	18.4	287.7	111.8	108.6	101.3	102.8	6.1	45.8
Firm 2.	32.3	15.1	(53.3)	88.8	71.5	123.8	117.9	20.4	18.4
Firm 3.	35.9	22.3	(37.9)	93.5	94.7	109.0	103.5	6.1	6.9
Firm 4.	59.1	16.1	(72.7)	102.4	96.7	99.4	104.8	2.8	13.9
Firm 5.	72.8	50.4	(30.8)	96.8	103.2	101.9	98.3	2.5	8.9
Food	23.5	23.1	(1.5)	99.6	93.7	100.6	106.1	3.4	3.1
AVGQR of Sample	18.9	18.2	(3.7)	101.6	92.1	97.3	108.9	5.3	7.0
A of R of Sample	24.6	23.3	(5.3)	99.8	98.8	97.4	104.0	2.0	7.2
Firm 6.	9.7	10.2	4.8	97.4	93.3	112.8	96.6	6.4	18.5
Firm 7.	13.3	17.7	33.0	96.6	108.5	101.9	93.8	5.0	24.4
Firm 8.	23.8	18.8	(20.9)	103.0	96.3	98.9	101.5	2.3	9.8
Firm 9.	22.1	26.9	21.6	82.3	87.9	128.0	103.4	15.3	33.7
Firm 10.	23.0	35.3	53.9	121.1	82.4	45.6	149.7	35.7	21.1
Primary Metals	21.0	13.2	(37.0)	100.6	97.8	99.5	102.2	1.4	5.9
AVGQR of Sample	16.4	9.9	(40.0)	102.4	96.4	101.2	100.1	1.8	7.6
A of R of Sample	23.4	13.8	(41.1)	101.0	97.1	101.8	100.5	1.6	6.9
Firm 11.	8.0	8.4	4.9	93.6	101.8	110.2	95.0	5.9	23.1
Firm 12.	15.2	12.2	(19.8)	103.2	99.9	97.3	99.3	1.7	12.0
Firm 13.	22.6	12.4	(45.2)	101.8	98.8	98.0	102.4	1.8	14.4
Firm 14.	34.5	11.9	(65.4)	91.1	108.0	101.9	99.8	4.7	14.9
Firm 15.	42.9	19.0	(55.7)	92.4	89.1	101.1	119.5	9.7	9.3

TABLE 14--Continued

Industry or Firm	Trend Line First Value	Trend Line Last Value	Measure of Historical Trend	Measures of Seasonal Variation: First Qtr.	Second Qtr.	Third Qtr.	Fourth Qtr.	Overall Seasonality	Cyclical + Irregular Variation
Chemicals	19.6	15.2	(22.4)	100.7	96.3	99.2	103.9	2.3	6.0
AVGQR of Sample	16.1	14.7	(9.2)	100.5	94.5	99.3	105.7	3.1	5.7
A of R of Sample	19.1	18.6	(2.2)	100.7	98.2	99.8	101.2	1.0	4.5
Firm 16.	7.9	8.9	11.9	93.4	98.8	100.7	107.7	4.0	11.1
Firm 17.	18.3	8.3	(54.7)	113.7	95.5	90.0	97.7	7.6	43.2
Firm 18.	16.1	15.2	(5.4)	101.9	91.8	101.6	104.5	4.1	12.1
Firm 19.	16.2	25.4	56.4	100.3	94.6	101.4	103.7	2.7	9.8
Firm 20.	33.6	22.7	(32.6)	97.9	90.6	100.8	111.0	5.8	6.3

[a]The first two columns are trend values of CL/TA ratios. Remaining columns are percentages of trend values.

[b]Data listed for "AVGQR of Sample" were computed from the weighted average CL/TA ratio of the firms in the sample each quarter. Data for "A of R of Sample" were computed from the unweighted average of the CL/TA ratios of each firm in the sample in each quarter. These data are included to show the family resemblances between the FTC-SEC data and related sample data, as discussed in Section 2.4.

Explanatory notes: See Section 4.3, "Calculations." Source: Compiled from data listed in Section 2.6.

aggregates, the simple rate of growth of current liabilities exceeded 4% annually. In ten of them including the groups of smallest and largest firms, the simple growth rate exceeded 6%.

The measures of historical trend in Table 15 thus indicate clearly that the declining CL/TA ratios noted in Section 4.3 were the results of a high growth rate of total assets rather than declining use of current liabilities. All manufacturing corporations, taken together, increased their use of current liabilities from $37.3 billion to $58.3 billion, a 56% rise in trend value over the period.

Seasonal variation.--Average quarterly seasonal variation of total dollars of current liabilities was 5% or less of trend value in all aggregates except Tobacco. Current liabilities in Tobacco varied seasonally by 11%, as indicated by the average figures for the four quarters which were, in per cent of trend, 112%, 88%, 91%, and 109%. In dollar terms, the trend value of current liabilities in Tobacco increased linearly from $550 million to $808 million during the period. Seasonal fluctuations around the historical trend line averaged approximately $60 million to $90 million. Since this amount of seasonal variation was more than double that of any other aggregate, relative to trend values, one is forced to the conclusion that the great bulk of current liabilities is used to finance asset requirements other than those of a seasonal nature.

Cyclical plus irregular variation.--Average quarterly cyclical plus irregular variation ranged between 5% and 11% of trend value for all aggregates. Thus the same conclusion applies to both these types of fluctuations and to seasonal variation. Moreover, the highest combined seasonal, cyclical, and irregular variation was in

Tobacco at 18%, indicating that total dollars of current liabilities were between 82% and 118% of trend value in the 45 quarters studied if all variations exerted their influences in the same direction, at the same time, and in average degree. As demonstrated in the next section, to say that at least four-fifths of the current liabilities of the aggregates could be considered permanent is unduly conservative. With one exception, the minimum proportion of permanent current liabilities was nine-tenths.

Results: Individual Firms

Firm 1 is not included in this analysis because the data submitted was from consolidated balance sheets for part of the period and from non-consolidated balance sheets for the rest. Although the data are adequate for comparing ratios, discontinuities in dollar figures distort the results in this section. The firm is used as one of the 20 despite this defect because it has the highly informative characteristic of using less current-liability financing than any other sample firm in Electrical Machinery. Since any discontinuities can only increase the measures of variation, including Firm 1 introduces no bias in favor of the hypothesis.

Historical trend.--Historical trend was higher in ten of the 19 firms than in their related aggregates. Although the CL/TA ratios declined in 12 firms, only three reduced the dollar amount of current liabilities used during the period in terms of trend values.

Firm 4 financed half its assets with current debt at the beginning of the period and about 30% with net worth. Net worth was substituted for short- and long-term debt with the result that by the end of the

period this firm financed about 70% of assets with net worth compared to 30% for current liabilities and a negligible amount for other debt. This is an extreme but worthwhile illustration of the use of current-liability financing as an alternative source of funds by a small firm. The two other firms with declining historical trends also were ones in which net worth grew much faster than total assets.

Seasonal variation.--Seasonal variation in all but one individual firm was greater than that of the related aggregate. However, average quarterly seasonal variation exceeded 10% of trend value in only five firms, including one in each of the four sample industries except Food. One firm in Food averaged 19.1% seasonal variation and another averaged 50% variation. With these five exceptions, seasonal variation among the firms was of the same order of magnitude as in Tobacco, discussed earlier in this section, and the same conclusions apply. Further discussion of the most variable firms is postponed until combined variations and permanent levels of current liabilities are discussed explicitly.

Cyclical plus irregular variation.--Ten of the 19 firms experienced average quarterly cyclical plus seasonal variation of total dollars of current liabilities in excess of 20% of trend value. It exceeded 35% in four firms.

Combined seasonal, cyclical, and irregular variation was less than 20% in five of the 19 firms, less than 30% in 12, and over 30% in seven. Even with these amounts of average variation it is likely that at low points in the use of current liabilities there were still substantial amounts in use.

Only one firm appears to have experienced variation of any degree approaching that suggested by traditional theory. Firm 10, mentioned above as having seasonal variation of 50%, also had cyclical plus irregular variation of 43%. However, inspection of the data for this firm reveals that current liabilities never fell to an insignificant level, the above degrees of variation notwithstanding. The variations apparently tended to offset rather than reinforce each other, judging from the fact that 49% of this firm's current liabilities may be considered permanent, as measured in the next section.

This section shows clearly that the magnitudes of variation in current liabilities are substantial in some individual firms but they rarely, if ever, reflect the periodic return of current liabilities to negligible levels. The variable margin of current liabilities, especially that of a seasonal nature, tends to be relatively small.

4.5 Permanent Current Liabilities and Current Assets

Purpose

The preceding analysis indicates that there is a definite empirical basis for testing further the hypothesis that a substantial proportion of current liabilities finances assets required continuously by the going concern. Seasonal variation tends to be confined to a much more narrow margin than that implied by traditional literature. Although current liabilities are subject to somewhat wider cyclical plus irregular fluctuations, this probably is true of all sources of funds and, hence, of total assets as well.

The purpose of this section, perhaps the most important part of the analysis, is to measure the permanent parts of current liabilities

TABLE 15--MEASURES* OF HISTORICAL TREND, SEASONAL VARIATION, AND CYCLICAL PLUS IRREGULAR VARIATION OF TOTAL DOLLARS OF CURRENT LIABILITIES IN SELECTED GROUPS OF MANUFACTURING CORPORATIONS
MARCH 31, 1952 - MARCH 31, 1963

Industry or Size Group	Trend Line First Value	Trend Line Last Value	Measure of Historical Trend	Measures of Seasonal Variation: First Qtr.	Second Qtr.	Third Qtr.	Fourth Qtr.	Overall Seasonality	Cyclical + Irregular Variation
Durable Goods Industries	22,721	33,014	45.3	100.3	99.4	99.3	101.1	0.7	5.7
Electrical Machinery	2,661	5,591	110.1	102.0	98.6	100.2	100.4	1.0	9.7
Furniture	380	662	74.2	101.4	98.0	101.3	99.5	1.3	7.2
Lumber	621	985	58.6	98.2	100.0	103.3	98.8	1.6	8.5
Motor Vehicles	4,132	4,776	15.6	101.4	97.8	94.9	105.8	3.6	10.6
Other Metal Products	1,822	2,856	56.8	99.8	103.6	101.2	95.5	2.4	5.7
Primary Metals	3,826	4,457	16.5	100.3	97.9	99.5	102.3	1.3	7.6
Stone, Clay, Glass	873	1,473	68.8	97.2	97.4	103.3	102.5	2.8	5.5
Nondurable Goods	14,532	25,281	74.0	100.9	96.2	101.3	102.2	2.0	5.7
Apparel	807	2,125	163.4	101.0	102.3	107.8	91.3	5.0	10.5
Chemicals	2,529	4,325	71.0	101.1	95.8	99.3	104.3	2.6	7.1
Food	3,544	5,726	61.6	99.9	91.9	101.1	107.6	4.2	6.2
Paper	1,060	1,622	53.1	98.8	96.6	102.7	102.2	2.4	5.6
Petroleum Refining	2,597	4,989	92.1	100.5	96.9	100.6	102.5	1.7	5.0
Printing	645	1,547	139.9	97.3	97.2	104.8	102.2	3.1	7.3
Rubber	655	1,354	106.7	104.5	99.5	98.3	98.5	2.1	7.9
Textiles	1,684	1,988	18.1	101.4	101.6	102.2	94.8	2.6	6.8
Tobacco	550	808	46.8	111.9	87.6	90.6	109.1	10.7	7.1
All Manufacturing Corps.	37,253	58,295	56.5	100.5	98.0	100.1	101.5	1.0	5.1
TA Under $1 Million	4,201	7,167	70.6	98.0	99.1	103.4	100.0	1.6	5.7
TA $1 - $5 Million	4,116	6,093	48.0	99.9	99.2	102.1	99.0	1.0	7.5
TA $5 - $10 Million	2,050	2,269	10.7	98.4	97.9	102.4	101.5	1.9	9.0
TA $10 - $50 Million	6,147	6,141	(0.1)	99.1	98.2	101.3	101.4	1.4	5.7
TA $50 - $100 Million	2,565	4,042	57.6	100.2	97.9	100.7	101.5	1.1	6.3
TA Over $100 Million	18,175	32,581	79.3	101.8	97.5	98.4	102.5	2.1	4.9

*The first two columns are dollars of current liabilities. Remaining columns are percentages of trend values.

Explanatory notes: See Section 4.4, "Calculations." Source: Compiled from data listed in Section 2.6.

TABLE 16--MEASURES[a] OF HISTORICAL TREND, SEASONAL VARIATION, AND CYCLICAL PLUS IRREGULAR VARIATION OF TOTAL DOLLARS OF CURRENT LIABILITIES IN SELECTED INDIVIDUAL MANUFACTURING CORPORATIONS
MARCH 31, 1952 - MARCH 31, 1963

Industry or Firm	Trend Line First Value	Trend Line Last Value	Historical Trend	Measures of Seasonal Variation: First Qtr.	Second Qtr.	Third Qtr.	Fourth Qtr.	Overall Seasonality	Cyclical + Irregular Variation
Electrical Machinery	2,661	5,591	110.1	102.0	98.6	100.2	100.4	1.0	9.7
Firm 1.[b]									
Firm 2.	3,107	2,356	(24.2)	84.7	62.1	130.4	124.0	26.9	22.5
Firm 3.	15,798	33,798	113.9	91.9	92.0	114.6	102.9	8.4	9.8
Firm 4.	7,932	975	(87.7)	109.6	93.8	99.9	112.7	7.1	28.9
Firm 5.	6,444	10,234	58.8	94.7	106.3	103.9	96.1	4.8	22.2
Food	3,544	5,726	61.6	99.9	91.9	101.1	107.6	4.2	6.2
Firm 6.	33,737	62,935	86.5	97.7	94.8	113.8	94.7	6.7	18.7
Firm 7.	2,180	2,680	22.9	95.1	109.4	101.9	94.2	5.5	20.9
Firm 8.	329	1,792	445.4	108.9	98.9	102.4	101.8	3.5	18.7
Firm 9.	3,440	4,211	22.4	79.4	83.2	133.6	105.5	19.1	42.0
Firm 10.	6,151	55,624	804.2	135.1	83.5	36.2	184.6	50.0	42.9
Primary Metals	3,826	4,457	16.5	100.3	97.9	99.5	102.3	1.3	7.6
Firm 11.	7,255	13,373	84.3	89.0	101.4	111.9	96.3	7.0	27.3
Firm 12.	86,925	108,950	25.3	103.2	100.8	96.5	99.1	2.1	15.7
Firm 13.	18,948	19,354	2.1	102.1	98.2	97.0	102.5	2.3	17.2
Firm 14.	2,299	3,447	49.9	87.4	112.8	101.5	98.8	7.0	21.2
Firm 15.	2,044	1,836	(10.2)	87.8	85.2	101.3	126.8	13.8	12.8
Chemicals	2,529	4,325	71.0	101.1	95.8	99.3	104.3	2.6	7.1
Firm 16.	24,162	37,687	56.0	93.3	98.8	100.2	108.6	4.2	12.8
Firm 17.	373	423	13.3	112.6	92.0	86.4	107.6	10.4	59.4
Firm 18.	19,095	38,829	103.3	101.5	91.6	102.9	105.0	4.5	12.4
Firm 19.	1,372	17,933	1,207.1	118.7	103.3	108.7	107.5	9.6	35.6
Firm 20.	8,405	31,825	278.7	97.1	86.5	104.0	112.5	8.2	8.7

[a]The first two columns are dollars of current liabilities. Remaining columns are percentages of trend values.

[b]See Section 4.4, "Results: Individual Firms," for reason Firm 1. omitted.

Explanatory Notes: See Section 4.4, "Calculations." Source: Compiled from data listed in Section 2.6.

and also of current assets for comparative purposes. All types of variations are allowed to exert their full effects which are then isolated and eliminated from total current liabilities and total current assets. The resulting minimum or permanent levels are compared with total assets and other indicators of their relative quantitative importance. Tables 17 - 20, at the end of this section, contain the results.

Calculations

There is probably no entirely satisfactory way to calculate the permanent levels of current-liability financing for all aggregates and individual firms in general because of the diversity of magnitudes and patterns of fluctuations encountered in the total amounts. Establishing a dividing line between permanent and temporary current liabilities is a matter of judgment to a large extent. In some cases, the best method might be very informal, involving nothing more than observing the troughs of the graph of the CL/TA ratio. In such cases it could be argued, depending on expectations about the future, that current liabilities tend always to finance the observed minimum proportion of total assets and will continue to do so.

More than likely, however, the CL/TA ratio in a practical situation would hit several "unusual" lows and highs in a period as long as the eleven years studied here. Whether the measure of the permanent proportion of assets financed with current liabilities should be influenced by these exceptional levels is a matter for management to decide in light of the expected frequency of their recurrence. In any event, historical levels of permanent current liabilities and current assets serve only as reference points for decision making purposes. When

considering cost of capital, for example, expected future CL/TA ratios are the important ones, not those observed in the past.

A standardized method of calculating permanent current liabilities and current assets is used here to facilitate comparison between the 45 sets of data studied. The period analyzed includes the eleven years starting in 1952 and ending in 1962. Five steps are involved in the computational process, including the calculations of the following quantities: (1) the 44 quarterly CL/TA and CA/TA ratios for each aggregate and firm; (2) the mean of each of these sets of 44 ratios; (3) the unsigned difference between each of the 44 ratios and its related mean; and (4) the average of these unsigned differences between the ratios and their respective mean. The average absolute difference between the mean CL/TA or CA/TA ratio and the 44 quarterly ratios in the series is an approximation of the margin of variation of that series. An estimate of the permanent proportions of current liabilities and current assets is obtained by subtracting the variable proportion from the mean proportion.

It should be emphasized that percentages in this section are different from those in Sections 4.3 and 4.4. In the two previous sections they are percentages of trend values. Here the percentages are parts of the ratios themselves, i.e., the permanent per cent plus the temporary per cent of a given CL/TA or CA/TA ratio is the actual ratio itself. Tables 17 and 19 at the end of this section contain the results of these calculations. Expressing them in terms of the CL/TA and CA/TA ratios allows for changing dollar amounts through time in a given aggregate or firm and permits comparisons between the 45 sets of data studied.

Undoubtedly the use of a standardized method has sacrificed accuracy in instances in which the circumstances of a particular firm or aggregate would suggest the use of another method of calculation. However, in the context of this paper, differences of a few points in the permanent CL/TA or CA/TA ratios are not as important as the proof of their existence and their general order of magnitude.

Given the permanent CL/TA and CA/TA ratios, dollars of permanent current liabilities and current assets may be obtained for a given quarter by multiplying the actual dollar amount of total assets by the appropriate ratio. Dollars of temporary current liabilities and current assets may then be calculated by subtracting the permanent dollar amounts of each from their respective actual total dollar amounts. Tables 18 and 20 contain the results of these calculations expressed as the proportions which permanent current liabilities and current assets represent of their respective total amounts and of total assets. The temporary proportions of their total amounts are also listed. They are 100% less the permanent proportions, of course.

As a check on the suitability of the above methodology in the context of this paper, dollars of permanent current liabilities in each quarter were calculated for three sets of data: Electrical Machinery; one of the firms most subject to cyclical and seasonal variations; and one of the firms experiencing rapid growth but moderate seasonal and cyclical variation. Dollars of permanent current liabilities were then plotted along with dollars of total current liabilities. In each case, use of the suggested method of caluclation yields a satisfactory division between the temporary and permanent parts of total current liabilities. Although the results are by no means perfect in every

quarter, it is apparent even in the most variable firm that the results listed in Tables 17 - 20 are in fact entirely adequate for the purpose of creating a reasonably accurate impression of the general level of permanent current liabilities and current assets. It bears repeating, however, that any individual firm may well devise an alternative way of estimating permanent current liabilities or current assets better suited to its circumstances and, more important, to expected future conditions.

Results: Industries and Size Groups

Permanent current liabilities.--Among the 25 sets of aggregated data, the highest average quarterly deviation of the CL/TA ratios was 4.66%. This was in one of the most variable industries with respect to current-liability financing, Motor Vehicles, which had a mean CL/TA ratio of 28.68%. Subtracting the 4.66% average margin of variation from the mean ratio of 28.68% leaves a permanent proportion of current-liability financing equal to 24% of total assets.

Nineteen of the aggregates experienced an average quarterly margin of variation of less than 2% from the mean CL/TA ratio. Since the average deviations are calculated from the single mean ratio rather than from trend values, changes in the CL/TA ratios resulting from an increasing or decreasing historical trend as well as variations due to seasonal, cyclical, and irregular causes are included. Thus it is evident that the margin of current-liability financing within which variation occurred was indeed very small when calculated from aggregated data.

All of the aggregates financed over 11% of their total assets permanently with current liabilities. In 22 of them, including all size groups, the amount of permanent current-liability financing exceeded that obtained from intermediate- and long-term creditors combined. In Petroleum Refining, which had the lowest proportion of permanent current liabilities of all the aggregates, the proportion of total assets financed by permanent current liabilities (11.3%) compared least favorably with that of other debt (14.9%).

Similar results obtained when dollars of temporary and permanent current liabilities were examined. Motor Vehicles and Primary Metals are the only aggregates in which temporary current liabilities exceeded 10% of total current liabilities in the period studied. Motor Vehicles was highest at 14.2% and Primary Metals followed at 10.9%. At least 90% of the total current liabilities of all other aggregates were permanent. When viewed in terms of proportions of total assets, temporary current liabilities financed no more than 4% of the total assets required by any aggregate, based on the 11 year average. Only five aggregates finance as much as 2% of total assets with temporary current liabilities.

Permanent current assets.--Current assets displayed an even narrower margin of variation than current liabilities, on a relative basis. Average quarterly deviation was highest in Motor Vehicles for the CA/TA as well as the CL/TA ratio. Motor Vehicles, at 4.15%, was the only aggregate in which the average quarterly deviation of the CA/TA ratio from the mean CA/TA ratio was over 3%. After deducting the temporary amounts, permanent current assets exceeded 50% of total assets in 18 aggregates and were 40% or more in all but Petroleum Refining (30%).

Since the margin of variation was small, permanent current assets were correspondingly large proportions of total current assets in all the aggregates. The maximum level of temporary current assets was in Motor Vehicles, 6.4% of total current assets, and permanent current assets were 93.6% of the total, the lowest such proportion.

The upper limit to the ratio of temporary current assets to total assets was 3.7% in Motor Vehicles. As would be expected, these ratios were of the same order of magnitude as those of temporary current liabilities to total assets. Temporary current assets constituted 2.0% or more of total assets in only five of the aggregates, as was the case with respect to temporary current liabilities.

Results: Individual Firms

Permanent current liabilities.--Average quarterly deviation of CL/TA ratios from their means tended to be larger for individual firms than for aggregates. It exceeded 10% in two firms, reaching a maximum of 13% in the Food firm which used the most current-liability financing. This was the firm mentioned in Section 4.4 as having the highest combined seasonal, cyclical, and irregular variation of any of the 45 sets of data. Average quarterly deviation was between 5% and 10% in seven firms and under 5% in eleven.

Five of the 20 firms financed only 5% to 10% of their assets permanently with current liabilities. Four of these, however, are the firms chosen expressly because they used the lowest amounts of current liabilities of all the sample firms in their respective industries. Half of the firms financed between 10% and 20% of their assets permanently with current liabilities and five financed over 20% in this manner. Permanent current liabilities exceeded other debt in 15 of

the firms; of the remaining five, four are those just mentioned as using exceptionally low levels of current liabilities.

Permanent current liabilities tended to constitute smaller proportions of total current liabilities in the firms than in the aggregates. While the ratio of permanent to total current liabilities fell below 90% in only two of the aggregates, it did so in all but three of the individual firms. However, half or more of total current liabilities was permanent in 18 of the firms and three-fourths or more was permanent in 15 of them. The lowest proportion of permanent to total current liabilities was 43%, followed by 49% for the exceptionally variable Food firm discussed above.

Permanent current assets.--The margin within which the variation of current assets occurred was small, with the quarterly CA/TA ratios varying by an average of 5% or less in 12 firms, over 5% to 10% in six firms, and over 10% in only two firms. As a result, substantial amounts of the firms' total assets were in the form of permanent current assets. In 11 of the firms, permanent current assets were 50% or more of total assets and in 18 of them the ratio was 30% or higher.

The narrow margin of variation of current assets is reflected further in the ratio of permanent current assets to total current assets. Only five firms had permanent current assets less than 90% of total current assets and no firm had less than 60%.

Generally, a larger proportion of current assets was permanent than that of current liabilities. This would be expected if the absolute dollar amounts of temporary current assets and temporary current liabilities were closely related while total current assets were much larger than total current liabilities. When both temporary current

assets and temporary current liabilities are related to the same base, total assets, it is evident that in most cases the ratios are very small and of the same order of magnitude. Only three firms had temporary current assets equal to as much as 10% of total assets. The same was true with respect to temporary current liabilities.

4.6 Principal Results of Chapter IV

This section contains a summary of the principal results and conclusions of Chapter IV in the form of 14 propositions. These propositions, together with the 20 listed in Section 3.6 in summary of Chapter III, form the empirical foundation on which the discussion in Chapters V - VII is based.

Chapter III is devoted to an analysis of the amounts, variability, and functions of current liabilities compared with those of other debt and net worth. The outstanding results are as follows. No apparent reasons for excluding current liabilities from long-run financial considerations are revealed by their comparative quantitative characteristics. The analysis suggests that the underlying determinants of the amounts and behavior of current-liability financing are essentially the same as for other sources of funds. Current liabilities are an integral part of the financial affairs of the going concern: the tendency in traditional financial literature to isolate them from many of those affairs lacks theoretical as well as empirical justification.

Chapter IV continues the analysis by focusing attention solely on current liabilities. The amounts, variability, and functions of the four major components of total current liabilities are quantified on a comparative basis. Then historical trend, seasonal variation, and

TABLE 17--PERMANENT CURRENT LIABILITIES AND PERMANENT CURRENT ASSETS IN SELECTED GROUPS OF MANUFACTURING CORPORATIONS 1952 - 1962

Industry or Size Group	Average % CL/TA Ratio	Average Deviation of % CL/TA Ratios From Mean Ratio	Permanent % CL/TA	Average % CA/TA Ratio	Average Deviation of % CA/TA Ratios From Mean Ratio	Permanent % CA/TA
Durable Goods Industries	25.71	2.13	23.58	59.64	2.18	57.46
Electrical Machinery	30.60	2.99	27.61	67.76	2.32	65.44
Furniture	26.79	1.41	25.38	70.51	0.80	69.72
Lumber	19.97	1.07	18.90	51.67	2.14	49.53
Motor Vehicles	28.68	4.66	24.02	57.76	4.15	53.61
Other Metal Products	24.43	1.36	23.07	63.74	1.63	62.10
Primary Metals	17.16	2.21	14.94	45.49	2.57	42.92
Stone, Clay, Glass	17.68	1.45	16.23	47.39	2.67	44.72
Nondurable Goods	18.77	0.82	17.95	50.10	1.98	48.12
Apparel	40.09	3.27	36.82	82.60	0.93	81.68
Chemicals	17.44	1.47	15.98	48.85	2.42	46.43
Food	23.30	1.12	22.17	58.34	0.91	57.43
Paper	15.81	1.37	14.44	42.46	2.94	39.52
Petroleum Refining	12.06	0.74	11.32	32.10	2.19	29.91
Printing	25.75	1.03	24.72	61.70	1.00	60.70
Rubber	23.12	1.21	21.91	67.01	2.55	64.46
Textiles	21.32	1.44	19.88	60.65	1.96	58.69
Tobacco	21.89	2.03	19.86	88.53	1.58	86.95
All Manufacturing Corps.	22.30	1.39	20.91	54.96	2.06	52.90
TA Under $1 Million	32.71	1.83	30.88	65.46	0.92	64.54
TA $1 - $5 Million	27.38	1.34	26.04	65.72	0.69	65.03
TA $5 - $10 Million	23.65	1.29	22.36	63.97	0.70	63.27
TA $10 - $50 Million	22.61	1.39	21.22	61.56	0.85	60.72
TA $50 - $100 Million	21.17	1.46	19.72	56.58	1.70	54.88
TA Over $100 Million	20.19	1.80	18.38	49.72	2.49	47.23

Explanatory notes: See Section 4.5, "Calculations." Source: Compiled from data listed in Section 2.6.

TABLE 18--THE AVERAGE RELATIVE SIZE OF PERMANENT AND TEMPORARY CURRENT LIABILITIES AND CURRENT ASSETS IN SELECTED GROUPS OF MANUFACTURING CORPORATIONS
1952 - 1962

Industry or Size Group	Permanent $CL as % Total $CL	Temporary $CL as % Total $CL	Temporary $CL as % $ TA	Permanent $CA as % Total $CA	Temporary $CA as % Total $CA	Temporary $CA as % $ TA
Durable Goods Industries	93.1	6.9	1.8	97.0	3.0	1.8
Electrical Machinery	92.7	7.3	2.2	97.5	2.5	1.7
Furniture	94.2	5.8	1.6	98.9	1.1	0.7
Lumber	94.3	5.7	1.1	96.3	3.7	1.9
Motor Vehicles	85.8	14.2	4.0	93.6	6.4	3.7
Other Metal Products	94.9	5.1	1.2	97.8	2.2	1.4
Primary Metals	89.1	10.9	1.8	95.1	4.9	2.2
Stone, Clay, Glass	93.4	6.6	1.1	95.6	4.4	2.1
Nondurable Goods	96.0	4.0	0.7	96.7	3.3	1.6
Apparel	90.3	9.7	4.0	98.7	1.3	1.1
Chemicals	93.0	7.0	1.2	96.1	3.9	1.9
Food	95.1	4.9	1.1	98.5	1.5	0.8
Paper	92.8	7.2	1.1	94.4	5.6	2.4
Petroleum Refining	94.9	5.1	0.6	94.7	5.3	1.7
Printing	95.7	4.3	1.1	98.7	1.3	0.8
Rubber	95.6	4.4	1.0	97.2	2.8	1.9
Textiles	93.2	6.8	1.5	96.8	3.2	2.0
Tobacco	90.4	9.6	2.1	98.4	1.6	1.4
All Manufacturing Corps.	94.7	5.3	1.2	96.9	3.1	1.7
TA Under $1 Million	93.8	6.2	2.0	98.5	1.5	1.0
TA $1 - $5 Million	94.7	5.3	1.5	98.9	1.1	0.7
TA $5 - $10 Million	94.4	5.6	1.3	98.9	1.1	0.7
TA $10 - $50 Million	94.0	6.0	1.3	98.7	1.3	0.8
TA $50 - $100 Million	94.2	5.8	1.2	97.5	2.5	1.4
TA Over $100 Million	93.1	6.9	1.4	96.1	3.9	1.9

Explanatory notes: See Section 4.5, "Calculations." Source: Compiled from data listed in Section 2.6.

TABLE 19--PERMANENT CURRENT LIABILITIES AND PERMANENT CURRENT ASSETS IN SELECTED INDIVIDUAL MANUFACTURING CORPORATIONS 1952 - 1962

Industry or Firm	Average % CL/TA Ratio	Average Deviation of % CL/TA Ratios From Mean Ratio	Permanent % CL/TA	Average % CA/TA Ratio	Average Deviation of % CA/TA Ratios From Mean Ratio	Permanent % CA/TA
Electrical Machinery	30.60	2.99	27.61	67.76	2.32	65.44
Firm 1.	11.24	5.49	5.75	46.89	15.22	31.67
Firm 2.	23.84	7.05	16.79	76.04	5.71	70.33
Firm 3.	29.25	4.20	25.05	81.70	2.30	79.40
Firm 4.	37.81	11.94	25.86	79.83	5.05	74.78
Firm 5.	62.34	7.12	55.22	85.77	3.04	82.72
Food	23.30	1.12	22.17	58.34	0.91	57.43
Firm 6.	9.98	2.00	7.98	60.38	4.92	55.46
Firm 7.	15.46	4.04	11.43	34.31	2.42	31.89
Firm 8.	21.36	2.51	18.85	50.40	3.87	46.53
Firm 9.	24.52	9.46	15.07	57.72	8.54	49.18
Firm 10.	28.77	12.87	15.89	67.21	5.65	61.56
Primary Metals	17.16	2.21	14.94	45.49	2.57	42.92
Firm 11.	8.31	1.90	6.41	31.93	8.33	23.60
Firm 12.	13.74	1.84	11.90	33.07	2.79	30.28
Firm 13.	17.55	3.41	14.14	49.59	2.88	46.71
Firm 14.	23.50	6.66	16.84	71.11	4.29	66.82
Firm 15.	31.17	7.14	24.02	78.99	5.30	73.69
Chemicals	17.44	1.47	15.98	48.85	2.42	46.43
Firm 16.	8.43	0.98	7.44	29.98	1.82	28.17
Firm 17.	13.42	6.47	6.95	48.57	16.77	31.81
Firm 18.	15.68	2.01	13.68	59.15	3.19	55.96
Firm 19.	20.84	3.19	17.65	57.70	3.59	54.11
Firm 20.	28.21	3.89	24.32	65.21	4.80	60.40

Explanatory notes: See Section 4.5, "Calculations." Source: Compiled from data listed in Section 2.6.

TABLE 20--THE AVERAGE RELATIVE SIZE OF PERMANENT AND TEMPORARY CURRENT LIABILITIES AND CURRENT ASSETS IN SELECTED INDIVIDUAL MANUFACTURING CORPORATIONS
1952 - 1962

Industry or Firm	Permanent $CL as % Total $CL	Temporary $CL as % Total $CL	Temporary $CL as % $ TA	Permanent $CA as % Total $CA	Temporary $CA as % Total $CA	Temporary $CA as % $ TA
Electrical Machinery	92.7	7.3	2.2	97.5	2.5	1.7
Firm 1.	43.2	56.8	7.6	60.2	39.8	20.9
Firm 2.	70.7	29.3	7.0	93.1	6.9	5.2
Firm 3.	89.3	10.7	3.0	97.2	2.8	2.3
Firm 4.	64.2	35.8	14.4	92.8	7.2	5.8
Firm 5.	89.7	10.3	6.3	96.5	3.5	3.0
Food	95.1	4.9	1.1	98.5	1.5	0.8
Firm 6.	79.7	20.3	2.0	92.9	7.1	4.2
Firm 7.	75.1	24.9	3.8	93.2	6.8	2.3
Firm 8.	91.0	9.0	1.9	91.2	8.8	4.5
Firm 9.	58.1	41.9	10.9	83.7	16.3	9.6
Firm 10.	48.6	51.4	16.8	89.3	10.7	7.4
Primary Metals	89.1	10.9	1.8	95.1	4.9	2.2
Firm 11.	76.0	24.0	2.0	70.2	29.8	10.0
Firm 12.	86.8	13.2	1.8	91.6	8.4	2.8
Firm 13.	82.5	17.5	3.0	94.0	6.0	3.0
Firm 14.	79.0	21.0	4.5	95.1	4.9	3.4
Firm 15.	79.5	20.5	6.2	94.4	5.6	4.3
Chemicals	93.0	7.0	1.2	96.1	3.9	1.9
Firm 16.	87.8	12.2	1.0	94.0	6.0	1.8
Firm 17.	50.1	49.9	6.9	61.6	38.4	19.9
Firm 18.	87.6	12.4	1.9	93.5	6.5	3.9
Firm 19.	79.3	20.7	4.6	94.4	5.6	3.2
Firm 20.	90.7	9.3	2.5	95.3	4.7	3.0

Explanatory notes: See Section 4.5, "Calculations." Source: Compiled from data listed in Section 2.6.

cyclical plus irregular variation of both the CL/TA ratio and total dollars of current liabilities are measured. Finally, the proportions of total assets financed permanently with current liabilities are approximated. The most outstanding results of Chapter IV are: (1) the permanent parts of current liabilities and current assets were large; (2) current liabilities financed substantial proportions of total assets permanently during the period studied; and (3) manufacturing corporations tended to get more permanent financing from current liabilities than from intermediate- and long-term debt combined. Other important results and conclusions of the analysis in Chapter IV are listed in the order discussed in Sections 4.2 through 4.5.

1. Short-term bank loans was a relatively small and variable source of current debt but industries and firms differed widely with respect to its use. In general, manufacturing corporations used short-term bank debt equal to about 15% of total current liabilities. Although smaller firms didn't use higher than average amounts of bank loans, they used them more continuously, in terms of the coefficient of variation. The data suggest that industry rather than size characteristics determined the amount of short-term bank loans used. When large amounts were used, their influence on total current assets tended to be more of a shorter-term than long-term nature.

2. Trade accounts payable was by far the largest and least variable source of short-term credit for manufacturing corporations, supplying an average of 36% of total current liabilities during the period. Industry rather than size characteristics appear to have determined the amounts used except that firms with assets under $1 million obtained 54% of their current liabilities from this source compared with 30% - 40% for all other size groups. The influences of trade accounts payable were mostly long-term, contributing large amounts toward the growth of total current liabilities.

3. The level of accrued taxes is associated directly with profitability. Manufacturing corporations in general had 15% - 25% of their current debt in this form. Accrued taxes was the most variable source of short-term funds. It declined in absolute dollar terms in

many of the aggregates and was generally a limiting factor on the growth of current liabilities. Accrued taxes was the largest source of shorter-term influences on total current liabilities.

4. The catch-all group of "other current liabilities" was one of the larger and more stable sources of current liabilities, furnishing 28% of all current liabilities of manufacturing corporations as a whole. In many of the aggregates it ranked with trade accounts payable as a source of growth influences on total current debt while providing fewer shorter-term influences than any of the other three components of current liabilities. As asset size increased, the proportion of other current liabilities increased as did that of accrued taxes.

5. Seasonal variation of the CL/TA ratios of the aggregates was small without exception. Maximum average seasonal deviation of the quarterly CL/TA ratios from their trend values was 8.7% in Tobacco followed by 3.4% in Food. All other aggregates experienced under 3% seasonal variation.

6. Average quarterly cyclical plus irregular variation of the CL/TA ratio was also small, reaching a maximum of 8.1% of trend in Motor Vehicles. Maximum combined average quarterly seasonal, cyclical, and irregular variation was 14% of trend in Tobacco.

7. Variations in total dollars of current liabilities were of the same order of magnitude as indicated in propositions 5 and 6. Maximum combined average quarterly variation was 18% in Tobacco, composed of 11% of trend for seasonal variation and 7% for cyclical plus irregular variation.

8. Although variations in both the CL/TA ratios and total dollars of current liabilities generally were larger in the individual firms than in the aggregates, they were not so large as to indicate the periodic return of current liabilities to levels anywhere near zero as a result of seasonal, cyclical, or irregular variation. Instead, they clearly reinforced the hypothesis that the margin of variation of current liabilities tends to be relatively small and suggested the presence of substantial minimum or permanent levels of current liabilities.

9. Permanent current liabilities for each aggregate and firm were measured by subtracting the average quarterly unsigned deviation of the CL/TA ratios from their mean value for the given aggregate or firm. Among the aggregates, no series of CL/TA ratios varied by more than

the 4.66% observed in Motor Vehicles. Twenty aggregates experienced average quarterly differences from the mean of 2% or less in their CL/TA ratios. (These percentages are in terms of the CL/TA ratios themselves rather than percentages of trend values.)

10. When these margins of average deviation were subtracted from the mean ratios, substantial permanent levels of current liabilities remained even though this method of calculation eliminates variations due to increasing or decreasing historical trends, seasonal variation, and cyclical plus irregular variation. At least 90% of total current liabilities may be considered permanent in 23 of the aggregates. The minimum proportion of permanent to total current liabilities was 86% in Motor Vehicles.

11. No aggregate financed less than 11% of its assets permanently with current liabilities. All but three financed a larger proportion of assets with permanent current liabilities than with intermediate- and long-term debt combined and in the three that did not the difference was almost negligible.

12. Current assets tended to have smaller proportionate margins of variation than current liabilities because the order of magnitude of the temporary dollars involved was the same while total current assets exceeded total current liabilities by large amounts. Over half the total assets of 18 of the aggregates were in the form of permanent current assets and only Petroleum Refining (30%) fell below 40%.

13. Although the margin of variation of current liabilities was larger for most individual firms than for the aggregates, permanent current liabilities exceeded all other debt in 15 of them. Permanent current liabilities were 75% or more of total current liabilities in 15 firms and financed 10% or more of total assets in a like number, including five firms which financed over 20% of total assets permanently with current liabilities. Most of the remaining five firms were those chosen expressly because they used relatively small amounts of current-liability financing. However, all 20 firms financed over 5% of total assets permanently with current liabilities.

14. In 11 of the 20 firms, permanent current assets were 50% or more of total assets and in 18 of them at least 30% of total assets were in this form. Current assets were less variable than current liabilities, proportionately, with the result that 15 firms had permanent current assets equal to 90% or more of total current assets and in no firm was the ratio less than 60%.

The 34 propositions characterizing the statistical analysis, including the 20 in Section 3.6, give staunch support to the hypothesis of this paper. Current liabilities are indeed a significant source of funds for many manufacturing corporations on a continuing basis. There is, as hypothesized at the outset, a permanent level of current liabilities which provided substantial amounts of funds to these firms over an extended period of time. Introducing permanent current liabilities to the mainstream of financial thought is the task of the following chapters.

CHAPTER V

A COMPARISON OF THE THEORETICAL PROPERTIES OF PERMANENT CURRENT LIABILITIES AND OTHER FORMS OF DEBT

5.1 Introduction

The statistical analysis in Chapters III and IV leads to the conclusion that current liabilities are used by manufacturing corporations to finance assets needed continuously by the going concern as well as to finance temporary asset requirements. In fact, even when considering only minimum or permanent levels of current liabilities--after deducting the variable margin--it is evident that manufacturing corporations in general used more current liabilities to finance assets permanently than all other sources of creditor funds combined during the 1952-1962 period.[3]

These facts do not fit well with traditional theories of current-liability financing, as outlined in Chapter I. From the traditional point of view, the function of current liabilities is assumed to be limited almost solely to financing "self-liquidating" seasonal or other temporary asset requirements except for a very small amount of unavoidable short-term debt, such as wages payable, which is always

[3] See Section 4.6 for a summary of the statistical results supporting this conclusion.

present. (Not all theorists recognize even this low level of permanent current liabilities and few ascribe any importance to it.) On the basis of this assumption, most theorists consider it unnecessary to concern themselves with current liabilities when discussing those areas of financial theory in which it is customary to emphasize the long-term implications.

Since the empirical evidence indicates emphatically that the traditional assumption of the quantitative unimportance of permanent current liabilities is incorrect, re-examining the theoretical justification for excluding them from long-run financial considerations is a logical next step. The two purposes of this chapter are (1) to clarify the important theoretical differences between temporary and permanent current liabilities and (2) to indicate the differences and similarities between permanent current liabilities and long-term debt for analytic purposes. These topics are discussed in Sections 5.2 and 5.3 respectively.

Chapters VI and VII are a re-evaluation of the role of permanent current liabilities in specific areas of financial theory in light of the findings of Chapters I - V. To minimize the inevitable discontinuities in such a compartmentalized approach, the nine central propositions to be discussed in these last three chapters are stated below. Propositions 1-3 are discussed in this chapter, 4-7 in Chapter VI, and 8-9 in Chapter VII.

1. Permanent current liabilities are longer-term sources of funds, by definition. Considered as a single group of funds, their quantitative characteristics and theoretical properties are similar to those of other long-term sources of funds in that they provide substantial amounts of capital to many firms on a continuing basis and constitute alternative means of permanent financing for most manufacturing corporations.

2. Temporary current liabilities are short-term sources of funds, by definition. The theoretical treatment usually accorded total current liabilities by traditional analysts is appropriate only with respect to temporary current liabilities.

3. The most risky way to finance a business enterprise may be, and often is, with permanent current liabilities.

4. Permanent current liabilities are used to finance large amounts of current assets permanently. Consequently, the concept of "net working capital" (current assets less current liabilities) is inadequate when it is intended to represent the amount of current assets needed by the firm on a permanent basis.

5. Current liabilities would not be available to the firm in the absence of creditor protection by an actual or expected equity base contributed by the residual owners. Their use constitutes trading on the equity. Moreover, in a given situation, their use tends to limit opportunities to trade on the equity using other sources of funds without paying a penalty in terms of higher costs of capital.

6. The use of current liabilities, as with other limited cost funds, magnifies gains and losses in the rate of return to the residual owners of the firm. They can be among the least expensive ways to obtain the advantages of leverage as well as the most risky.

7. In line with the above, an analysis of the debt capacity of the firm should include all alternative sources of debt and not just the firm's capacity to use safely and advantageously incremental amounts of longer-term debt as traditionally defined. This approach is prerequisite to a comprehensive evaluation of the risks and costs which the firm faces as well as to its future income producing potential.

8. Permanent current liabilities are alternative sources of growth funds and may be exceptionally inexpensive. Thus they should be an integral part of capital-budgeting and cost-of-capital theory.

9. A firm cannot realistically evaluate the alternative risks, costs, and income prospects of all available long-run financial plans without including permanent current liabilities as a potential source of capital and permanent current assets as required investments. Decisions regarding optimum financial structures demand consideration of permanent current liabilities and permanent current assets if for no other reason than their relatively large size compared with other liabilities and assets as found in many firms.

5.2 Differences Between Temporary and Permanent Current Liabilities

Temporary current liabilities and permanent current liabilities perform different functions in the financing of a firm. The primary function of temporary current liabilities is to finance the fluctuating margin of asset requirements; that of permanent current liabilities is to provide assets needed for longer periods of time, permanent current assets in particular. For analytic purposes it is often worthwhile to approach them as short-term and longer-term sources of funds respectively.

Justification for this approach rests on fundamental differences in their analytic properties, including risk, suitability, substitutability, and controllability. These differences suggest, for example, that temporary and permanent current liabilities should not be lumped together when evaluating a firm's liquidity or debt capacity. In order to have a sound basis for indicating the lines along which temporary and permanent current liabilities should be incorporated into financial theory, the nature of their differences with respect to underlying analytic or theoretical properties must be stated with some precision.

Size and variability.--The amounts of permanent current liabilities used by manufacturing corporations in general tend to be much larger than temporary current liabilities. However, the validity of this statement depends largely on the asset structure and sales pattern of any given firm or industry. It is not true in all cases, but, at the same time, it probably would be unusual to encounter a going manufacturing corporation in which permanent current liabilities are a negligible porportion of the total. Permanent current liabilities are by

definition less variable in total amount than temporary ones (and may very well be less variable than either other debt or net worth over an extended period of time).

Risk and liquidity.--Temporary current liabilities tend to be much less risky than permanent current liabilities. This is true for two reasons. First, temporary current liabilities are usually repaid before unexpected and unfavorable shifts in demand, prices, earnings, stocks of liquid assets, and the like, have time to jeopardize their repayment. Second, in a going concern, the proceeds from converting assets to cash in the normal course of business are available to repay temporary but not permanent current liabilities except insofar as cash inflows exceed cash expenses. The level of permanent current liabilities can be reduced only by substituting other forms of longer-term funds, by misdirection of cash generated by the recovery of depreciation and other charges which are non-cash expenses only in a given accounting period, or by the permanent or "non-normal" liquidation of assets. These are the same alternatives for repaying other forms of longer-term debt and, in the going concern, only the first is practicable over a period of time whether permanent current liabilities, term loans, or bonded debts are being considered.

Traditional theory distinguishes between total current liabilities and long-term debt on the basis of the "automatic" repayment of the former, as outlined in Section 1.2. This distinction is valid, however, only between temporary and permanent liabilities. Specific provisions may be made for the repayment of temporary current liabilities prior to their incurrence and the time span is so short that there is comparatively little danger that funds for repayment will not be

forthcoming. Realization of net reductions in the level of permanent current liabilities at some future date is subject to considerably more uncertainty due to the longer time-span and differences in sources of funds for repayment. Permanent current liabilities may entail all the risks of bonded debt plus the added risk of shorter maturities, which require payment or refunding in bad times as well as good. This position is discussed in detail in the following section.

By the same reasoning as above, the adverse effect of temporary current liabilities on liquidity may not be as great as that of permanent current liabilities in the going concern. Although standard financial analysis may not reveal it, two firms with identical ratios of current liabilities to current assets may differ greatly with respect to their liquidity positions as a result of differing proportions of permanent and temporary current liabilities. A firm which reasonably can be expected to repay its temporary current liabilities in the near future through normal selling activity may be more liquid than a firm which must repay the same amount of permanent current liabilities during the same time period. Again, the reason is that funds for repayment of temporary current liabilities are provided "automatically" in the going concern whereas permanent current liabilities normally are repaid in the same manner as other longer-term debt. A practical manifestation of this notion may be observed when firms choose to end their fiscal years at points of normal lows in business activity when temporary current liabilities usually are liquidated and the liquidity position is at its best.

The importance of the distinction between temporary and permanent current liabilities on the basis of their relative risk can hardly be

overemphasized. Were all risks encountered in business enterprise as small as those associated with the use of temporary current liabilities, many short- and long-run financial problems would be less complex. Under such minimum risk circumstances it is likely that: (1) firms would maximize their use of the cheapest form of debt available while reducing equity investments to the barest minimum; (2) costs of debt would be reduced; and (3) the distinction between debt and equity would become blurred.

Cost.--Since both temporary and permanent current liabilities are heterogeneous groups of funds, there is no general basis for distinguishing between them on a cost basis. Sources of temporary funds vary between firms and industries. As indicated in Section 4.2, short-term bank loans and accrued taxes are generally the most variable--or temporary--sources of current liabilities and they are among the most and the least costly sources, respectively. Cost per dollar would be a significant distinguishing factor between temporary and permanent current liabilities only in a given firm which could identify its marginal source(s) of funds.

Availability.--Current liabilities sometimes are described as "spontaneous" sources of credit. There is an element of truth in this idea, especially with respect to accrued taxes and the items usually listed under "other current liabilities" such as wages and other expenses payable. However, short-term bank loans are hardly spontaneous and trade accounts payable may not be so. In any event, the question of availability involves the particular kind of current liability being considered as well as the matter of most concern in this context, its temporary or permanent nature.

To distinguish between the availability of temporary and permanent current liabilities is further complicated by the fact that the lender may not know or care which he is lending. In general, it is most likely true that the availability of both temporary and permanent current liabilities depends at least partially on the credit rating of the firm. If one is available then the other will be, too.

There is one basis for distinction, however. A firm which is considered by lenders to be using maximum amounts of debt given its circumstances may well be able to obtain additional temporary funds for demonstrated short-term needs, possibly with the stipulation that repayment of these funds be tied to the liquidation of the assets purchased with them. In this sense, temporary current liabilities may be more readily available than permanent ones.

This distinction is important from management's viewpoint because it implies that there is less need to provide for unexpected temporary increases in asset requirements than for the permanent base, part of which is financed with permanent current liabilities. Guthmann and Dougall were quoted on pages 3 and 4 as epitomizing traditional thought when saying "The greater attention given to long-term financing reflects . . . the need for careful long-range planning" (15, p. 2). The only modification in this viewpoint suggested here is the inclusion of permanent current liabilities as a part of long(er)-term financing even though the individual components are short-term funds.

Suitability and substitutability.--Without doubt, temporary current liabilities are the funds most suited to financing temporary asset requirments, as maintained in the traditional viewpoint outlined in Section 1.2. Permanent current liabilities cannot be used for this

purpose--otherwise they, too, would become temporary by definition. Alternatively, temporary current liabilities cannot be used to finance the purchase of assets required permanently because they would then become permanent current liabilities, again by definition. Thus in the case of current liabilities, the question of suitability is answered automatically because they are defined as temporary or permanent according to the use to which they are put.

All longer-term sources of funds, including permanent current liabilities, are considered suitable to one degree or another for financing permanent current asset requirements. In fact, for this purpose, permanent current liabilities, other debt, and net worth are substitutes. That their substitutability is imperfect obligates management to choose between them on the basis of such factors as their relative risk, cost, and availability. Management has no such obligations to choose between temporary current liabilities and the longer-term sources of funds because the former are suited only to the purchase of temporary current assets and there are no substitutes (in the absence of redundant long-term funds).

This position is well supported by the empirical evidence in Sections 3.3 and 4.5. Firms with total assets under $1 million are equity-poor compared with larger firms, judging from their low NW/TA ratios and high TD/TA ratios (Table 4). These small firms substitute debt, in both short- and longer-term forms, for equity.

In larger firms, the NW/TA ratio is fairly constant with respect to changes in asset size, ranging from 65% to 68% in all size groups over $1 million. Longer-term debt is substituted for current liabilities as increases in firm size and related aspects of improved financial strength provide opportunities to do so.

In firms with total assets over $1 million, the average CL/TA ratio falls with each increase in asset size, starting at 28% and ending at 20% in the largest firms. The OD/TA ratio rises with each increase in asset size from 8% to 14% in the largest firms. These two movements represent a shift in the composition of total debt rather than changes in its amount. In every size group over $1 million, the TD/TA ratio is from 32% to 35%; there is no apparent relationship between the level of the ratio and the amount of total assets.

The data also tend to confirm the hypothesis that permanent rather than temporary current liabilities are funded. Permanent current liabilities decrease with each increase in asset size, starting at 31% in the smallest firms and falling progressively to an average of 18% in the largest. Temporary current assets, however, show no such relationship to asset size or amount of funded debt. Except for the smallest firms with a ratio of 2.0%, the ratio of temporary current liabilities to total assets is from 1.2% to 1.5% for all size groups (Table 18).

If it is true that permanent current liabilities and other longer-term sources of funds are substitutes insofar as the financing of permanent current assets is concerned, then the level of permanent current liabilities is indisputably a long-run managerial policy variable. If it is also true that temporary current liabilities have no practical substitutes, it follows that the range of choice concerning their use is so small that management need not complicate long-run policy decisions by including them specifically. Certainly the matter of substitutability

is one of the most important bases for distinguishing between temporary and permanent current liabilities in financial theory.

One qualification should be noted regarding the existence of substitutes for temporary current liabilities which explains why they are a larger proportion of assets in the smallest firms than in larger ones. Larger firms, with generally stronger overall financial positions, are much more likely to have excess liquid assets in comparison with firms having total assets under $1 million. It is likely that, as a group, the smallest firms have few unneeded liquid assets. When they require more inventory for a short time, for example, many of these firms probably have to seek additional credit in the form of a temporary current liability.

Firms over $1 million, however, with generally stronger financial positions with regard to both stocks and flows of liquid assets (Table 10), would more often be able to rely on their own liquid assets to finance the temporary need for additional inventory.

Thus, larger firms are more likely to have redundant longer-term funds in the limited sense that they are less likely to be cash-poor than smaller firms. But in such cases, the policy variable is the firm's overall financial strength. Temporary current liabilities are still the marginal source of funds. There is no managerial decision to substitute a specific longer-term source of funds for temporary current liabilities: consequently, the analytic distinction between temporary and permanent current liabilities on the basis of substitutability still holds in the context of financial theory and managerial decision making problems.

Financial planning and control.--Summarizing all the above, the most important single distinction between permanent and temporary current liabilities is that the level of permanent current liabilities should be subjected to the same kinds of planning and control procedures as other longer-term sources of funds whereas the level of temporary current liabilities is much less a policy variable. Planning and control are possible because, within wide limits, management can differentiate between favorable and unfavorable levels of permanent current liabilities, goals for future levels can be set, and performance in reaching these goals can be evaluated. Planning and control are advisable because alternative means of financing are available to management. Planning and control are essential because of the potentially high risk of financing with permanent current liabilities,

On the other hand, desirable levels of temporary current liabilities are much less predictable. The desirable level is that which provides temporary asset requirements, requirements which are often foreseen but dimly if at all. There are no other practicable means of financing temporary current assets. Therefore, planning for temporary current liabilities takes the form of planning continuous overall financial strength sufficient to assure their availability. These factors, and the relatively low risk of financing with temporary current liabilities, permit management to exercise its planning and control functions in a much more passive way than is the case with respect to permanent current liabilities.

The position presented here may be contrasted with two others. Traditional theory does not consider current liabilities a part of long-run financial theory and tends to treat them in a planning and

control context as matters only of short-run liquidity. A much more recent position, advanced by Professor Schwartz, is that all current liabilities have been neglected in financial theory (33, p. 183; 49, p. 58; 50, pp. 18-20). No differences between temporary and permanent current liabilities are recognized. This paper differs from these two positions by recognizing the fundamental differences between temporary and permanent current liabilities. Permanent, but not temporary, current liabilities are considered to be an integral part of long-run financial theory and both the opportunity and the obligation of management to exercise appropriate long-range planning and control measures should be stressed.

5.3 The Risk of Financing with Permanent Current Liabilities Compared with That of Long-Term Debt

The emphasis in this section shifts to a comparison of the risks of using permanent current liabilities with those of using other longer-term debt. It is observed above that permanent current liabilities share many of the characteristics of longer-term debt, including a high risk potential, but no indications are given of the amounts of risk from these two sources of funds actually faced with business firms. The purpose of this section is to discuss these risks on a relative basis and in general terms.

Many traditional theorists recognize the high degree of risk potentially associated with current-liability financing as a result of the short maturities involved. Guthmann and Dougall (15, p. 53), Wessel (37, p. 291), and others state explicitly that it is dangerous to rely on current liabilities for more or less permanent funds. These views are developed in Section 1.2.

It is largely because of this risk, no doubt, that firms are urged by financial theorists to limit their use of current liabilities to financing "self-liquidating" seasonal or other temporary asset requirements. It is also because of this risk, and because large amounts of permanent current liabilities are being used in fact as alternative longer-term sources of funds, that specific provisions should be made for including permanent current liabilities in long- as well as short-run financial considerations.

Differences between the risks involved in using permanent current liabilities versus long-term debt are related directly to the amounts and timing of the required interest and principal payments. Risks due to interest payments are discussed first because they are less complex and probably less important.

The degree of risk resulting from interest charges is a function of the amount of interest in relation to the amount of earnings generated by the creditor funds. Whether the earnings generated by assets purchased with permanent current liabilities are greater than or less than those generated with other debt funds is a moot point. No generalization is known for distinguishing between the risk of permanent current liabilities and other debt on this basis. Nor is there a general basis for distinction as to the timing of interest payments since they probably fall due regularly in either case.

It is probably true, however, that in most going concerns which take advantage of trade-credit discounts, the interest charges for permanent current liabilities are less than those for other debt because substantial amounts of the former may be free of avoidable cost. For a given firm, financing a given amount of assets with permanent

current liabilities probably would entail less risk than using long-term debt because earnings could decline farther before the firm's ability to meet interest payments would be jeopardized.

This risk differential in favor of permanent current liabilities resulting from lower interest charges often may be overshadowed in actual practice by risks due to the amounts and timing of principal repayments. In a going concern which is not experiencing financial difficulty, permanent current liabilities may be refunded with relative ease. The same is likely to be true of other debt in many, if not most, instances. When financial adversity strikes, however, the risk of inability to handle the principal amounts of permanent current liabilities may be equal to or much greater than that of other debt, whether refunding or repayment is contemplated.

Although refunding a dollar's worth of permanent current liabilities sometimes may be easier than refunding a dollar's worth of other debt, the dollar amounts involved may be very unequal in a practical situation, even when equal proportions of total assets are financed by permanent current liabilities and other debt. Similarly, in a situation requiring actual repayment at a time when sales and income have declined unexpectedly, the firm may find it much harder to find cash to liquidate relatively large amounts of permanent current liabilities than to repay that portion of the long-term debt due in the near future.

The factor which determines the comparative risk is, of course, the amount due in periods of financial stress. To distinguish between two related aspects of this risk is useful. The first has to do with the likelihood that some amount will fall due in an unforeseen period

of unfavorable circumstances. The second concerns the size of the amounts that fall due in a given time period.

Whether or not long-term debt is amortized, it is likely to be less risky because it becomes payable less often than permanent current liabilities. When viewing a future period in which the timing of unfavorable financial circumstances is uncertain, it is more probable that permanent current liabilities will have to be refunded or repaid during lean times than long-term debt in that long-term debt, even when amortized, is not likely to mature as frequently as short-term debt.

This particular aspect of the risk differential in favor of long-term debt is greatest when long-term debt is unamortized. Management should then have the opportunity to arrange for its retirement at the most convenient times. Long-term debt often is amortized, however. In this case the risk differential in favor of long term debt may be even more substantial but for a somewhat different reason. Not only is amortized long-term debt likely to mature less frequently than permanent current liabilities, the principal amount of amortized long-term debt due in a given time span is likely to be less than the permanent current liabilities maturing in the same interval. This is certainly probable when considering the quarterly, semi-annual or annual time periods often used for long-range planning purposes.

The relative risks of inability to refund or repay principal amounts of permanent current liabilities versus long-term debt may be approximated crudely by comparing the amounts of each due within one year. For illustrative purposes, consider two firms identical in every way except with regard to the use of these two sources of funds.

Firm A finances 20% of total assets with permanent current liabilities. Firm B finances the same proportion of total assets with long-term debt which is amortized over a 10-year period. Firm A is obligated to refund or repay an amount equal to 20% of its assets annually whereas Firm B must arrange refunding or repayment of only 2%, one-tenth as much. If the average maturity of Firm A's permanent current liabilities were six months, a more likely situation, then its annual refunding or repayment obligation would be 20 times that of Firm B.

It is quite possible to conceive of circumstances in which Firm A would experience less difficulty than Firm B in maintaining solvency in the face of financial adversity. For example, if both firms were forced to operate at the point at which cash operating income and cash operating expenses were equal, perhaps Firm A could refund its permanent current liabilities more easily than Firm B could refund or repay a portion of its long-term debt, at that time. But it is no more difficult to postulate combinations of declining income, liquidity of assets, and duration of financial stress under which Firm A's position would be considerably more hazardous than that of Firm B.

Manufacturing corporations in general appear to subject themselves to a higher degree of risk with permanent current liabilities than with long-term debt due in a given time period. Table 21 lists the ratios of long-term debt due in one year to permanent current liabilities for all 25 aggregates during the period from 1954 through 1962. The ratios were calculated by dividing the 36-quarter sum of the former by the 36-quarter sum of the latter. Data for aggregates preceded by asterisks were available for only 35 quarters, starting with the second quarter of 1954.

In 19 of the aggregates, the average annual repayment or refunding burden of permanent current liabilities was a minimum of 20 times that of long-term debt, the upper limit depending on the time to maturity of the permanent current liabilities. The burden of current liabilities was at least ten times that of long-term debt in all six remaining aggregates. In all likelihood, differences of these magnitudes far outweigh differences due to differing levels of interest charges or, in times of financial stress, the relative ease of refunding or repaying equal dollar amounts of each kind of debt.

There are two important but offsetting sources of error in using the ratio suggested as a measure of the relative risks of inability to handle principal repayments. First, the ratio probably is lowered as a result of calculating permanent current liabilities from aggregated data. The sum of permanent current liabilities is likely to be higher than the sum of those calculated for each individual firm in the aggregate because of the tendency for fluctuations in individual firms to smooth out when aggregated. Second, the ratio is higher than its theoretically correct level because permanent current liabilities are assumed to have the same average life expectancy as long-term debt due within one year, an obviously erroneous assumption. Whether these two errors cancel each other is not known. But it is virtually certain that the second error is the larger and that, consequently, any net error would not affect the validity of the conclusions stated above.

As Weston says in a typical example of the traditional position, "Short-term financing to finance long-term needs is dangerous. A profitable firm may become unable to meet its cash obligations if

TABLE 21--THE RATIO OF LONG-TERM DEBT DUE IN ONE YEAR TO PERMANENT CURRENT LIABILITIES IN SELECTED GROUPS OF MANUFACTURING CORPORATIONS 1954 - 1962

Industry or Size Group	Percentage
*Durable Goods Industries	3.2
Electrical Machinery	1.9
Furniture	4.5
Lumber	9.9
Motor Vehicles	1.0
Other Metal Products	4.3
Primary Metals	6.4
Stone, Clay, Glass	5.9
*Nondurable Goods	4.4
Apparel	2.2
Chemicals	4.0
*Food	4.0
Paper	6.7
Petroleum Refining	5.8
Printing	4.9
Rubber	2.9
*Textiles	4.8
Tobacco	4.9
*All Manufacturing Corporations	3.7
*TA Under $1 Million	5.5
TA $1 - $5 Million	4.6
TA $5 - $10 Million	4.6
TA $10 - $50 Million	4.8
TA $50 - $100 Million	4.8
TA Over $100 Million	2.7

*No data are available for long-term debt due within one year for any of the 25 groups prior to the first quarter of 1954 nor for the starred groups prior to the second quarter of 1954. See Section 5.3 for explanation of calculations.

Source: Compiled from data listed in Section 2.6.

short-term borrowing has become tied up in permanent asset needs" (38, p. 266).[4] Although this position is valid as far as it goes, one should weigh carefully the traditional inference usually drawn from it, namely, that firms should finance all permanent current assets with long-term debt or equity. Not all firms are likely to have the opportunity to obtain enough long-term debt or equity to meet this objective (see Table 17, column 6). And among those that do, an evaluation of risk, cost, and availability considerations may quite logically lead to the conclusion that permanent current liabilities are an acceptable substitute for at least a part of the long-term funds that would be required. This is particularly true in smaller firms which, according to the SEC, may find flotation costs of long-term securities prohibitively high relative to the small amounts of funds required (40).

Apparently financial practitioners and theorists agree on the high level of risk associated with permanent current liabilities. The amounts of permanent current liabilities used by all aggregates, regardless of industry or firm size, are impressive. But just as striking is the shift from permanent current liabilities to longer-term debt which occurs as firms grow in size and financial strength, i.e., as the longer-term debt becomes more available (Table 4). As discussed in Section 5.2 under "Suitability and substitutability,"

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[4] Weston appears to be somewhat inconsistent when he states in his thirteenth "illustrative principle of business finance" that "Current liabilities should generally not be funded, because the primary purpose of incurring the current liability is to provide funds" (54, p. 138).

permanent current liabilities and long-term debt are substitutes with respect to financing permanent current-asset requirements. This chapter confirms that substituting long-term debt (or equity) for permanent current liabilities is not only theoretically desirable in many cases because of the risk differential but that, in actual practice, firms having the opportunity to substitute tend to do so at least partially.

The core of financial theory is the study of how business assets and liabilities produce income and risk. Among manufacturing corporations in general, permanent current liabilities produce more of both than alternative sources of longer-term debt. No further justification is needed for introducing permanent current liabilities into the heart of financial theory.

CHAPTER VI

A RE-EVALUATION OF THE ROLE OF CURRENT LIABILITIES: TRADITIONAL FINANCIAL THEORY

6.1 Introduction

This study was undertaken to investigate the traditional assumption that current-liability financing, by virtue of the short maturities of the individual items, has little effect on the going concern except with regard to near-term earnings and liquidity. Traditional theorists appear strongly inclined to equate long-run financial considerations with long-term sources of funds. In so doing, they tend to ignore the possibility that current liabilities, if used continuously, could also exert considerable influence on the firm's long-run financial structure.

A survey of financial literature in Chapter I indicates that, as a result of the traditional assumption, present-day financial theory lacks a well developed and consistent treatment of the role actually played by short-term debt in financing many business enterprises. Although neglect of the implications arising from the continual use of current liabilities as an alternative to longer-term funds is not universal, recognition of them generally has been spasmodic, fragmented, and undocumented.

The following hypothesis states the purpose of this paper clearly and positively.

> Current liabilities are a significant source of funds for many manufacturing firms on a continuing basis. Although the individual liabilities are repaid or refunded in one year or less and their total amount fluctuates, there is nevertheless a permanent level of current liabilities which provides substantial amounts of funds to these firms over extended periods of time. If this hypothesis is true, the permanent level of current liabilities must be measured and the functions of current liabilities re-evaluated, taking its size into consideration.

The hypothesis is tested by an extended analysis of income-statement and balance-sheet data covering 25 aggregates of manufacturing corporations and 20 individual firms for the 45 quarters beginning January 1, 1952 and ending March 31, 1963. The principal results of the analysis, contained in Chapters III and IV, are listed in Sections 3.6 and 4.6.

Certain quantitative aspects of current liabilities, other debt, and net worth are compared in Chapter III. The analysis establishes the basic propositions that current liabilities provide substantial amounts of long- as well as shorter-term financing; that the overall variability of these amounts is not especially great compared with other sources of funds; that the underlying determinants of the level and behavior of current liabilities are the same as for other sources of funds; and that, in consequence, there are no apparent reasons for excluding current liabilities from long-run financial considerations on the basis of their comparative amounts or behavior.

Variations in the amounts of current-liability financing used by manufacturing corporations are analyzed intensively in Chapter V. The empirical evidence suggests strongly that the margin within which variations in the level of business activity of going concerns occur

is much narrower than commonly supposed. Moreover, a relatively small proportion of the current liabilities used by the industries and firms studied is devoted to financing seasonal or other temporary asset requirements. The bulk of current-liability financing in all the industries and size groups and most of the individual firms studied is used instead to finance assets needed continuously when the firms operate at "minimum" or "basic" levels. Current liabilities are, in fact, the largest source of creditor funds used for this purpose in most of the aggregates. Therefore, the total amount of current liabilities used by the going concern is divisible conceptually into two parts, temporary and permanent current liabilities.

The appropriateness of this conceptual dichotomy for analytic purposes is examined in Chapter V. In essence, the theoretical characteristics of permanent current liabilities are closely akin to those usually associated with longer-term debt, for which they are a substitute with respect to financing permanent current assets. Temporary current liabilities, on the other hand, tend to be relatively risk free because of their semi-automatic availability and repayment and thus are not of vital concern with respect to the firm's long-run financial situation. Their analytic properties, in sharp contrast to those of permanent current liabilities, are basically those mistakenly ascribed to total current liabilities in traditional theory. The three basic propositions in Chapter V are listed on pages 157-158, items 1-3.

These findings support the hypothesis of this paper and indicate a definite need for a thorough-going re-evaluation of the role of current liabilities in financing the going concern. Traditional theorists may be quite correct when maintaining that firms should not

use current liabilities permanently in the sense that they would probably be better off using longer-term funds to lower the risk involved. But many firms do use current liabilities in this manner, either through choice because of generally lower costs and ready availability, or because no other sources of funds are available. Financial theory cannot be limited to the "ideally financed firm" to the point of excluding consideration of the most prevalent source of permanent debt financing among manufacturing corporations. The fact that permanent current liabilities may be the most risky kind of funds, for reasons suggested in Section 5.3, obligates financial theorists to identify fully the implications of their use.

The purpose of this chapter and the next is to indicate some of the theoretical deficiencies that may arise through failure to give explicit recognition to permanent current liabilities and to suggest some remedies. It is convenient to divide the discussion into two chapters with Chapter VI containing the more traditional financial topics and Chapter VII containing the "capital-budgeting" approach--the long-run model. Although this presentation conforms to the conventional topical format, there is a unifying idea, namely that business finance is the study of how business assets and liabilities produce income and risk.

The six specific propositions to be examined are listed in Chapter V, items 4-9 on page 158. Numbers 5-7 pertain to this chapter and 8-9 to Chapter VII. Not all the propositions are original. Their contribution results from their consistency and the specific recognition of the role of permanent current liabilities.

As a further limitation of scope, the boundaries of this paper are not intended to encompass solutions to the many complex and controversial problems in financial theory. Instead, the discussion is limited to a brief investigation of the effects of introducing permanent current liabilities into existing, and sometimes conflicting, bodies of financial thought. In a real sense, therefore, the purpose of the following is to highlight some of the important areas in which further study along lines implied by the results of the statistical analysis would be especially rewarding.

6.2 The Concept of Net Working Capital

Net working capital, the amount by which current assets exceed current liabilities, is used conceptually in traditional theory to measure the risk of current liability financing and to indicate the amount of current assets required permanently by the firm. Its limitations as an approximation of risk are discussed in Section 6.4, "Debt Capacity." The topic of this section is the relationship between net working capital and permanent current assets.

Net working capital is equal to permanent current assets if, and only if, (1) current liabilities are used to finance only temporary current assets, (2) no other sources of funds are used for this purpose and (3) the average life expectancy of temporary current assets is equal to that of total current liabilities. Traditional financial theory typically proceeds as if all these conditions were true in business firms in general. Among the firms and industries studied, however, the existence of any of them is rare.

Weston and Johnson provide two straightforward examples of the traditional position in recent literature. According to Weston (38, p. 262), net working capital is significant because it "represents the extent to which current assets are financed from long-term sources... a portion of current assets must be owned by the firm permanently. Consequently it is appropriate that a portion of current assets be financed from permanent sources." This point is illustrated pictorially in Weston's Figure 12-1, "Fluctuating versus Permanent Assets," in which the amounts of net working capital and permanent current assets are shown to be identical (38, p. 267).

Johnson discusses the relationship between permanent current assets and net working capital in the same terms and with essentially the same diagram as Weston (22, pp. 141-142). In so doing, both demonstrate their acceptance of the traditional assumption of equality between total current liabilities and temporary current assets. This assumption permits them to oversimplify matters by disregarding any long-term implications of permanent current liability financing because permanent current liabilities are not considered to be acceptable alternatives to long-term debt or equity in the ideally financed firm.

Traditional reasoning proceeds from (1) the assumption that current liabilities do, or should, finance only temporary current assets, to (2) the tautology that net working capital is equal to the amount of current assets financed with long-term debt or equity, to (3) the observation that all going concerns need some permanent current assets, to (4) the non-sequitur that net working capital equals, or should equal, permanent current assets. Whether or not this conclusion <u>should</u>

be true is a matter to be decided in light of the cost, risk, and availability of alternative sources of funds, the firm's debt capacity, and its optimal financial structure. That it is not actually true among manufacturing corporations in general is illustrated below.

Table 22, page 184, contains the percentage of permanent current assets represented by net working capital for the 25 aggregates and 20 individual firms analyzed in this study. The calculations are based on average net working capital and average permanent current assets in the 44-quarter period from January 1, 1952 through December 31, 1962.

The inequality of the two figures is readily apparent with net working capital understating permanent current assets in all but three of the 45 cases. Among the 25 aggregates, net working capital represented from one-half to two-thirds of permanent current assets except in Tobacco (76%). The individual firms were more diverse, ranging from 29% (Firm 5) to 124% (Firm 1). Net working capital understated permanent current assets by one-fourth or more in 15 of the 20 firms.

Three of the firms (1, 11, and 17) emphasize even more the absence of any necessary relationships between net working capital and permanent current assets in that the former overstated the latter by amounts ranging up to 24%. All three firms were selected for analysis because they used relatively small amounts of current liabilities. Net working capital (CA-CL) thus tended to be relatively high. In addition, these three firms were the lowest among the 20 studied with respect to the proportion of permanent to total current assets, i.e., their current asset requirements were the most variable (Table 20). These two factors combined to produce an excess of net working capital over permanent current assets.

TABLE 22--NET WORKING CAPITAL AS A PERCENTAGE OF PERMANENT CURRENT ASSETS IN SELECTED MANUFACTURING CORPORATIONS
1952 - 1962

Industry or Size Group	%	Industry or Firm	%
Durable Goods Industries	59.0	Electrical Machinery	57.0
Electrical Machinery	57.0	Firm 1.	124.0
Furniture	62.4	Firm 2.	73.6
Lumber	63.4	Firm 3.	67.5
Motor Vehicles	54.7	Firm 4.	54.0
Other Metal Products	63.1	Firm 5.	29.2
Primary Metals	66.1		
Stone, Clay, Glass	65.8	Food	60.9
		Firm 6.	89.6
Nondurable Goods	64.5	Firm 7.	59.6
Apparel	51.4	Firm 8.	65.2
Chemicals	67.1	Firm 9.	66.7
Food	60.9	Firm 10.	58.9
Paper	66.6		
Petroleum Refining	65.8	Primary Metals	66.1
Printing	58.8	Firm 11.	106.7
Rubber	67.4	Firm 12.	64.0
Textiles	67.0	Firm 13.	69.7
Tobacco	76.4	Firm 14.	73.2
		Firm 15.	64.9
All Manufacturing Corps.	61.4		
TA Under $1 Million	50.5	Chemicals	67.1
TA $1 - $5 Million	58.9	Firm 16.	76.3
TA $5 - $10 Million	63.7	Firm 17.	118.8
TA $10 - $50 Million	64.2	Firm 18.	79.0
TA $50 - $100 Million	64.4	Firm 19.	64.9
TA Over $100 Million	62.2	Firm 20.	60.6

Explanatory notes: See Section 6.2.

Source: Compiled from data listed in Section 2.6.

In general, however, net working capital tends to understate permanent current assets. Data for both the aggregates and individual firms (Tables 18 and 20) indicate that permanent current assets were typically a high proportion of total current assets in the period studied, ranging upward of 90% in most cases, and that permanent current liabilities represented the bulk of total current liabilities. Since a substantial proportion of current assets usually is financed permanently with current liabilities, it should be obvious that permanent current assets cannot be approximated by subtracting total current liabilities from total current assets except by happenstance.

At least four important sources of potential analytic or conceptional error are induced by the traditional concept of net working capital when it is intended to represent the firm's permanent current asset requirements. They are: (1) when net working capital instead of permanent current assets is included among asset requirements in capital-budgeting theory; (2) when permanent current liabilities are excluded from cost-of-capital theory because they are not used to purchase net working capital; (3) when the level of net working capital is said to constitute a rule of thumb limit to the amount of longer-term debt a firm properly may use; and (4) indirectly, when it is said current liabilities are repaid by means of asset liquidation whereas long-term debt is repaid with earning power.

Misuses of the net working capital concept and its limitations are discussed in appropriate sections of these two concluding chapters.

6.3 Trading on the Equity and Leverage

"Trading on the equity" and "leverage" are terms applied by financial analysts to the use of debt by business firms and its effect on financial structure and on income available to residual owners. As outlined in Section 1.2, the role of current liabilities in this regard is often neglected on grounds that they are used only temporarily and without conscious effort to obtain the financial benefits sought when trading on the equity with long-term sources of funds.

The results of the analysis in preceding chapters are diametrically opposed to the traditional position. It is demonstrated in Chapters IV and V that, from both an empirical and a theoretical viewpoint, permanent current liabilities are alternatives to long-term debt for the purpose of financing current assets required continuously by the firm. This point of view is not totally absent from the literature. Weston (38, p. 226) and Schwartz (33, p. 186) maintain, with meager substantiation, that the use of total current liabilities constitutes trading on the equity. Guthmann and Dougall (15, p. 438) add this contention somewhat casually to their discussion of short-term debt while omitting it from their treatment of trading on the equity and leverage as such. On the other hand, some of the more sophisticated treatments of the subject limit the discussion to capitalization, as does Hunt (43, p. 377), or extend it to include only bank loans as in the case of Walter (51, pp. 138-140).

Since general agreement on a specific approach, as distinct from the broad principles, is lacking in the areas of trading on the equity and leverage, the thoughts of several writers are collected in this section for the purpose of developing a starting point for the

construction of a more comprehensive theory. After some introductory comments, the discussion proceeds in terms of the attributes such a theory would possess.

The following material is based on five underlying ideas which are supported at least in part by the analysis in Chapter I - V. First, permanent current liabilities are substitutes for long-term sources of funds. Second, they would not be available continuously in the absence of creditor protection in the form of an equity base of both assets and earnings contributed by the residual owners. Third, as substitutes for long-term sources of funds, they may be used as alternative means to seek the benefits of trading on the equity. Fourth, their use may limit the use of other debt sources unless management is willing to pay a penalty in the form of higher interest costs. Fifth and last, the use of current liabilities magnifies fluctuations in net income available to residual owners as does the use of any source of funds which earns a limited return.

Among the important characteristics of an adequate theory of trading on the equity and leverage are the following.

1. The role of all sources of funds which earn a limited return should be included and the theoretical differences between temporary and permanent current liabilities should be recognized.

2. The theory should apply to all business firms without distinction as to industry or size. (One possible exception is the insurance industry which has uncertain liabilities.)

3. The theory should be consistent with and contribute to other aspects of financial thought including that concerning debt capacity, capital budgeting, cost of capital, and optimal financial structure.

4. Measures of trading on the equity and leverage should be consistent with their definition.

5. The measures adopted should permit inter-firm and inter-temporal comparisons.

6. Measures and definitions should distinguish clearly between the act of trading on the equity and the effects thereof.

7. Measures of the effects of trading on the equity should differentiate clearly between effects resulting from changes in degree of trading on the equity and effects resulting from changes in income before interest and taxes.

A theory that meets all these criteria has not yet been developed. The rudiments of such a theory are outlined below along with occasional references to differing viewpoints. Definitions of trading on the equity and leverage and ways to measure them are suggested first. Then these definitions and measures are evaluated briefly in light of the above criteria and their relationship to the ideas of other writers.

"Trading on the equity" is defined as the use of funds which earn a limited rate of return. This grouping of sources of funds may be called "leverage funds" as a matter of convenience. It includes current liabilities, other debt, preferred stock and any other source of funds not contributed by the residual owners.

"Leverage" is defined as those effects on net income available to the residual owners produced solely by the use of leverage funds, i.e., by trading on the equity. There are two kinds of effects to be considered, including (1) those resulting from changes in the degree to which the firm trades on the equity and (2) those resulting from the use of a given amount of leverage funds when the earning power of

the firm changes. Hunt calls the first "balance-sheet leverage" and the second "income-statement leverage," a useful distinction (43, p. 378).

A straightforward measure of the degree of trading on the equity is the ratio of leverage funds to total assets. This ratio indicates for any firm at any time the extent to which assets have been financed through trading on the equity.

Whereas the measure of trading on the equity is static in the sense that a balance sheet is static, measures of leverage are dynamic in that they attempt to measure amounts by which income available to residual owners changes as a result of trading on the equity over a period of time. Measuring balance-sheet leverage, that which accompanies a change in degree of trading on the equity as defined in "(1)" above, involves a comparison of the amount of income available to residual owners under two specified degrees of trading on the equity. It would be theoretically appropriate to assume in all cases that the earning power of the firm's assets is unchanged throughout, although in practice it is often unjustifiable to assume that a firm's average rate of return before interest and taxes remains constant when the level of total assets changes.

This potential defect notwithstanding, it is proposed to measure balance-sheet leverage as the ratio of the after-tax rate of return on residual owners' funds given one degree of trading on the equity to the rate of return given another degree of trading on the equity, the rate of earnings on total assets before interest and taxes remaining unchanged. This method may be used to measure the leverage effects of an increment to any degree of trading on the equity, including one in which no trading on the equity has occurred previously. It applies to

growth situations as well as those in which the analyst wants to determine the gain or losses resulting from the existing degree of trading on the equity. The numerical example below will clarify these ideas.

Income-statement leverage, that associated with a change in the earning power of assets under a given degree of trading on the equity, is easy to define in general terms but hard to measure satisfactorily. The difficulty arises from the fact that the relative magnitude of a change in net income depends on the base from which the change occurs. That is to say, for a given firm, with a given degree of trading on the equity, the leverage effects associated with changing levels of net operating income are curvi-linear. No general measure of the degree to which a given firm is susceptible to income-statement leverage is known. At best these effects may be measured at specified levels of net operating earnings, given the present state of analytic technique. Fortunately, however, this limitation does not invalidate any of the theory regarding the role of current liabilities.

Hunt suggests a "rate of growth" approach, comparing "(1) the rate of growth in earnings available to the common stock equity to (2) the rate of growth of earnings before interest and taxes" (43, p. 383). Dilbeck suggests "elasticity" as an alternative measure, using "the elasticity of income after interest and before taxes with respect to income before interest and taxes" (42, p. 129). Hunt's measure is used in this paper. An equivalent, and perhaps more satisfying, statement of it is: (1) the proportion of earnings before interest and taxes available to residual owners at one level of these

earnings divided by (2) the proportion at another level of earnings, the degree of trading on the equity remaining unchanged throughout.

A numerical example will simplify the exposition. Assume a firm operates under the following circumstances.

Total Assets	= TA	= $100,000
Current Liabilities	= CL	= 25,000
Other Debt	= OD	= 25,000
Net Worth	= NW	= 50,000

Earnings before interest and taxes = 20% of TA = $20,000.
Interest on CL = 4% = $1,000
Interest on OD = 4% = $1,000
Leverage Funds = LF = CL + OD = $50,000
Taxes = 50% of income after interest

Assume for the sake of simplicity that all net worth is contributed by the residual owners, as indicated by the fact that leverage funds are limited to debt in this example. The 4% interest rates on CL and OD were chosen for computational ease, their levels being inconsequential in this context so long as they are in a reasonable range. These conditions produce the following measures of trading on the equity and leverage.

Degree of trading on the equity = TOE = LF/TA = 50%

For purposes of measuring balance-sheet leverage, the circumstances assumed above are compared with those in which TOE = 0%.

$$\text{Balance-Sheet Leverage} = L_b = \frac{\$9,000/\$50,000}{\$10,000/\$100,000} = \frac{18\%}{10\%} = 1.80.$$

The 1.80 indicates that, by using leverage funds to finance 50% of total assets at a pre-tax cost of 4%, with earnings before interest and taxes at 20% of total assets, and with a tax rate of 50%, this firm improved its rate of return to residual owners by 1.8 times the amount which would have been earned had residual owners provided all the assets.

Another application of the idea of balance-sheet leverage is under circumstances in which the firm grows through the use of leverage funds. This is illustrated using the same conditions as above, including net operating income at a rate of 20% of total assets, but assuming the firm grows from TA = NW = $50,000 to TA = CL + OD + NW = $100,000.

The results should be the same as in the preceding paragraph because the effect of TOE = 50% is being compared with TOE = 0% in both cases. The calculation is:

$$L_b = \frac{\$9,000/\$50,000}{\$5,000/\$50,000} = \frac{18\%}{10\%} = 1.80.$$

Income-statement leverage, L_i, is measured in the following example by the first alternative mentioned on page 190. The return to residual owners at a level of earnings before interest and taxes of 20%, as above, is compared with that at 10%, with TOE at 50% in both cases.

$$\text{Income-statement leverage} = L_i = \frac{\$9,000/\$4,000}{\$20,000/\$10,000} = \frac{2.25}{2.00} = 1.125.$$

Alternatively, using the restatement of Hunt's formulation discussed above,

$$L_i = \frac{\$9,000/\$20,000}{\$4,000/\$10,000} = \frac{.45}{.40} = 1.125.$$

The 1.125 result indicates that, under the conditions given, when earnings before interest and taxes increase by 100%, i.e., from 10% of TA to 20% of TA, the return to residual owners increases an additional 12.5% due to the given degree of trading on the equity. In dollar terms at a level of earnings before interest and taxes of $10,000, the residual owners earn $4,000 after deducting $2,000 interest and $4,000 taxes. However, when earnings double to $20,000, the

residual owners earn $9,000 instead of twice $4,000, a gain of $1,000 or 12.5% due solely to the manner in which the assets of the firm were financed as distinct from their fundamental earning power.

No distinction is made in the foregoing between temporary and permanent current liabilities. The reason is that, from a mechanical viewpoint, the use of all current liabilities constitutes trading on the equity and creates leverage effects on net income available to residual owners. Nevertheless, there is an important distinction to be made in this context. Since temporary current liabilities are used intermittently and generally for purposes apart form seeking the benefits of trading on the equity, their inclusion in the above is appropriate only in the case of an evaluation of the historical performance of the firm.

If, on the other hand, management were evaluating different methods of financing future discretionary asset requirements, it should do so in terms of alternative sources of funds, including permanent but not temporary current liabilities. Management probably would think in terms of developing the financial plan it considers most beneficial to the residual owners. The level of temporary current liabilities would not be a variable in this context except in the qualified and indirect way having to do with overall financial strength discussed in Section 5.2.

When evaluating possible future gains and losses from trading on the equity, the level of temporary current liabilities is of marginal importance at most. This line of reasoning is consistent with the theoretical differences between temporary and permanent current liabilities discussed in Chapter V. It is supported further, although

somewhat indirectly and by implication, in Section 7.2, where a similar distinction is made between temporary and permanent current assets in a long-range planning situation.

The theoretical position of this paper, then, is similar to but by no means identical with that of Weston and Schwartz, mentioned earlier on page 186, as among those who advocate the unqualified inclusion of total current liabilities in the concept of trading on the equity and leverage. Moreover, the mechanics outlined above are partly those suggested by Hunt. The ensuing discussion indicates how the combined theory and mechanics in this paper represent an improvement over previous work.

In line with criterion 1, page 187, all sources of funds which earn a limited return are included in the analysis while, at the same time, the important theoretical distinctions between temporary and permanent current liabilities are recognized. Further, the theory applies to all firms regardless of industry or size because all forms of financing may be included or excluded as appropriate. (A possible exception for insurance companies was noted in criterion 2.) The theory is just as applicable to a small manufacturing firm dependent on permanent current liabilities as it is to a utility which uses large amounts of mortgage debt and little if any permanent current-liability financing. For the same reason, it is consistent with and contributes to other aspects of financial thought, thus meeting the third criterion of acceptability of the theory.

Consistency between measure and definition, criterion 4, apparently has been hard to achieve in contemporary literature. It is achieved in the present proposals by the simple device of considering

all sources of assets and all sources of net income to residual owners. As a contrasting example, one of many, Walter excludes all current liabilities except short-term bank loans from "leverage funds" but measures leverage in terms of the net rate of return from total assets, including assets purchased with current liabilities other than bank loans.

Walter's measure of leverage is the ratio of the net rate of return on shareholders' equity to net rate of return on capitalization (51, p. 140). It is not stated clearly whether the net rate of return on capitalization is intended to be the actual rate of return or the rate as it would have been if the capitalization consisted entirely of shareholders' equity. Hunt interprets Walter to mean the latter. But the important point for now is that the results do not measure just the effects of using debt in the capitalization, whichever way Walter intended the calculation to be made. It is a composite measure which includes the effects of gaining some earnings for both the residual owners and other contributors to the capitalization from assets financed with current liabilities. Quantitatively, the measured gains and losses from changes in the degree of TOE would both be less than their "true" value due to the understated asset base in the denominator of the L_b formula.[5]

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[5] It may be argued that Walter should be presumed correct because his formula, $p = L \cdot S/C \cdot lc/S$, works out correctly (51, p. 140). But this is a mathematical phenomenon which need not have anything to do with correctness. If it is accepted that $a = b/c$, then it can also be said that $a = r/s \cdot b/r \cdot s/c$ without any commitment to accept r/s as a proper measure of anything. This mathematical cancellation process also illustrates the kind of symbol manipulation behind Hunt's contention, which is quite correct in context, that the effect of income taxation cancels out when debt is used as the agency for trading on the equity (43, p. 379).

Hunt accepts Walter's measure of (balance-sheet) leverage after restating it more precisely as indicated just above (43, p. 379). Apparently Hunt intends, as Walter did, that it measure the effects of using a given amount of long-term leverage funds at a given level of income before taxes and interest despite the fact that earnings attributable to assets purchased with short-term funds are included. The Hunt/Walter measure of L_b was rejected on page 192 in favor of a measure which includes total assets in the denominator and allows specifically for the effect of using current liabilities.

The same reasoning applies to Hunt's measure of income-statement leverage and Dilbeck's suggested improvement of it. Both were discussed earlier on page 190. (Walter does not distinguish between balance-sheet and income-statement leverage.) Hunt's measure of L_i is acceptable because both numerator and denominator include the effects of current liabilities. It is the definitions of TOE and L_i that needed clarification.

Whether or not the measures suggested in this paper permit inter-firm and historical comparisons, criterion 5, is to some extent a matter of familiarity with them, personal preference, and knowledge of their limitations. Hunt finds his measures very useful for making such comparisons as does Walter. The more comprehensive, orderly, and straightforward approach suggested in this paper should lend itself better to this purpose, however.

Criterion 6 states that a distinction should be made between the act of trading on the equity and the effects thereof. The terms "trading on the equity" and "leverage" are suggested with definitions intended to accomplish this end. Although these terms may be synonyms

in customary usage to some extent, as stated by Guthmann and Dougall (15, p. 168), failure to make a distinction leads to semantic difficulties of the type pursued by Hunt (43) and Dilbeck (42). Hunt measures the act of trading on the equity with his formula for the balance-sheet leverage effects on residual net income discussed above. Dilbeck quite correctly indicates the deficiencies in such an approach and offers the use of a more conventional measure. The measure of trading on the equity adopted in this paper, LF/TA, is not far from traditional measures such as TD/NW or TD/TA as suggested by Weston (38) and others but it has the advantage of directness and inclusiveness.

The final criterion, that effects on residual net income due to changes in the degree of trading on the equity should be distinguished from those resulting from changes in earnings before interest and taxes, is satisfied by the use of "balance-sheet leverage" for the former and "income-statement leverage" for the latter. This approach is advocated by Hunt and appears to be a definite improvement over previous treatments which combine the two kinds of leverage or ignore one kind.

Although many facets of the theory offered above may be traced directly to the work of others, when considered as a whole it represents a more sound theoretical starting-point than any of them taken individually. It is obviously not intended to do more than re-orient the fine contributions of Hunt, Walter, or others concerned with this topic. Instead, by emphasizing the long-neglected role of current liabilities it is hoped that the suggestions made here represent another step toward a more general theory of finance.

6.4 Debt Capacity

Defining and measuring the amounts of leverage funds used by a firm and the consequent effects on net income available to residual owners is only one segment of the theory of debt financing and one of the more mechanical ones at that. From a managerial as well as a theoretical viewpoint, the problems of debt financing are centered on decisions as to the amounts and kinds of leverage funds a firm should use.

These decisions are made in accordance with the decision-makers' assessment of the firm's debt capacity. "Debt capacity" refers to the firm's ability to utilize funds provided in exchange for guaranteed but limited returns which may range from 0% in the case of certain current liabilities to a rate potentially rivaling that earned by the residual owners in the case of preferred stock. One vital function of theoretical finance is to provide the decision maker with a generalized set of criteria which help him make acceptable debt-financing decisions.

The above "definition" of debt capacity is purposefully vague because of the variety of approaches that may be made to this topic. "Capacity" denotes a limit to the amount of debt the firm should use. In the traditional treatment of debt capacity, the idea of a limit is stressed in that the decision maker is provided criteria intended to help him avoid undue risk through excessive use of debt. Gains from trading on the equity, the potential benefits of leverage, are well known but they are a secondary consideration compared with the risk-limiting aspects insofar as the decision criteria are concerned. One such criterion is: confine the amount of debt to a level at which all

service charges in "normal" years are covered at least X times by the funds available to pay them.

On the other hand, the firm's "ability to use" debt carries with it the connotation of effective utilization, the maximization of gains from trading on the equity. From this point of view, generally adopted by theorists with a capital-budgeting approach to financial theory, the decision maker is furnished rules by which he can improve profits by using debt. The rules themselves to not emphasize the risk aspects of debt financing. An example of this kind of criteria which is over-simplified but germane is: use debt up to the point at which the marginal return from the use of debt is equal to the marginal cost of the debt.

The discussion in this section is confined to the role of permanent current liabilities in the traditional risk-limitation treatment of debt capacity. Additional comments on alternative approaches are contained in Chapter VII. As a further indication of intended scope, the topic of debt capacity is so broad and so fundamental that it would be unwise to attempt to devise in this paper final solutions to current theoretical deficiencies, however prominent this may be as a goal for financial theorists.

The traditional approach to debt capacity is well enough known to require little exposition or documentation. Reference may be made to any standard text in the field of finance. Debt capacity is evaluated in terms of financial risk. The analyst seeks to derive a kind of subjective probability regarding the firm's future ability to meet principal and interest payments.

Basically, the tools and theories involved are those used by informed investors. Balance-sheet and income statement data usually are converted to ratios indicating the coverage of the debt by assets and earnings. These ratios may then be analyzed in terms of departures from levels considered to be normal or safe given the firm's actual or expected circumstances.

In accordance with the traditional dichotomy between current-liability financing and long-term financing, the analysis of debt capacity is divided into short-term and long-term areas. The ability of a firm to carry short-term debt is indicated by the safety provided in the form of liquidating values of current assets. Since all, or nearly all, current liabilities are assumed to be used only temporarily and then to be liquidated at least semi-automatically, the normal business process will provide funds to cover repayment of the short-term debt. The risk analysis concentrates on the excess of current assets over current liabilities, the net-working-capital position, which indicates the margin of safety in asset coverage necessary in view of the fact that the liquidating values may be less than book values of the current assets. When interest is payable on short-term debt, the analysis also would typically incorporate these payments in ratios comparing financial charges with amounts available to meet them.

The traditional analysis of a firm's long-term debt position is similar. The ratios involved compare actual principal amounts of debt with book values of assets and net worth and relate financial charges to funds available for their payment. There is also the peculiar rule that long-term debt shall not exceed net-working capital. This rule is based on a mixture of one erroneous and two dubious reasons. First,

since net working capital is assumed equal to permanent current assets, long-term debt should not exceed net working capital because it could then lack coverage by "long-term" asset values--a matter of so-called "suitability." Second, the almost totally inconsistent reason is offered that if long-term debt does not exceed net working capital, then total debt is covered by "short-term" assets--a matter of liquidation values in time of stress. Third, and perhaps least relevant, if creditors provide only current assets, owners will have been required to furnish the fixed asset base. This rule is rejected as a managerial guideline, except insofar as investors' attitudes are concerned, on grounds stated in Section 6.2 and those listed two paragraphs below. As J. B. Canning stated about net working capital in 1929, "It is certainly not enlightening to be told that if one subtracts the measure of one thing from the measure of a second, the resulting difference is the net measure of a third thing" (6, pp. 47-48).

Just as the procedures for analyzing a firm's debt capacity are well known, so are the advantages and disadvantages of the kinds of results produced. The tenacity of this approach to debt capacity is due in no small measure to its speed, convenience, and the ready availability of data. It is a good indicator of potential trouble areas and it is useful for comparisons between firms and between time periods. Investors and other outsiders generally are forced to rely on it for lack of internal accounting data. And its widespread use by investors provides the greatest advantage--that of conveying to management the vital facts about probable investor attitudes toward the firm.

These advantages notwithstanding, dissatisfaction with standard ratio analysis as a tool for managerial use is increasingly common among financial theorists, including those with a traditional orientation. In general terms, it lacks objectivity, despite the (deceptive) precision of the ratios, because of the necessity to compare the results with normal or safe levels which are established largely on a subjective basis. It relies heavily on the liquidating values of assets--which may not be particularly relevant except in the case of actual liquidation. It deals poorly with uncertainty, although uncertainty is the heart of risk. Its ability to handle the relationship between charges for using debt and future ability to generate the necessary funds is limited. It is more adept at assessing the effects of a given debt than at indicating the amounts and kinds of debt that should be used. That is, the decision criteria are not clear.

Moreover, following the traditional break between short- and long-term matters, the procedures outlined above tend to imply that if (1) the amount of short-term debt used by the firm falls within the standard margins of safety and (2) the same is true with respect to long-term debt, then (3) the overall debt position of the firm is satisfactory (in some sense). Under these conditions, an overall ratio, such as total debt to net worth, is not likely to be far out of line with established norms.

Within the traditional framework, this short-term/long-term break does make what is alleged to be the fundamental distinction between kinds of debt--that between current liabilities and other debt. But the analysis of preceding chapters indicates clearly that there is also, if not instead, a fundamental conceptual division between temporary and

permanent current liabilities. A final objection to the traditional analysis, the one on which this paper focuses directly, is that the traditional division between total current liabilities and other debt is an insufficient and misleading allowance for differences in the composition of the debt used by business firms.

Two firms identical in every respect except their use of temporary and permanent current liabilities could differ widely with respect to the comparative burdens of their debts. Neglecting earnings coverage of financial charges, firms A, B, and C, whose pro forma balance sheets are listed immediately below, would be considered to be using debt within their capacity to do so by standard ratio analysis. In practice they may differ substantially in the degree of risk they face. Other things equal, risk would be expected to vary directly with the proportion of permanent to total current liabilities for reasons discussed in Chapter V.

A.

		Temp. CL	$ 5
		Perm. CL	20
CA	$ 50	Total CL	25
		OD	25
FA	50	NW	50
TA	$100		$100

B.

		Temp. CL	$ 10
		Perm. CL	15
CA	$ 50	Total CL	25
		OD	25
FA	50	NW	50
TA	$100		$100

C.

		Temp. CL	$ 20
		Perm. CL	5
CA	$ 50	Total CL	25
		OD	25
FA	50	NW	50
TA	$100		$100

D.

		Temp. CL	$ 30
		Perm. CL	10
CA	$ 50	Total CL	40
		OD	10
FA	50	NW	50
TA	$100		$100

Or, to look at it another way, traditional analysis would reject firm D's position because of the poor current ratio while accepting

that of firm A. This is a straightforward illustration of misplaced emphasis when analyzing the composition of the firm's debt in the traditional manner. Total debt is the same in both firms and long-term debt doesn't exceed net working capital in either. However, Firm D uses less than half as much debt permanently and may be much less susceptible to financial risk.

Numerous attempts to improve the analysis of debt capacity have been made in recent years. Some of them proceed along "cost-of-capital" lines. Solomon, among those mentioned earlier as emphasizing the profitable use of debt, suggests decision criteria which depend on the market's reactions to the firm's policies in terms of changes in security prices. It is not until the last part of the last chapter of Solomon's The Theory of Financial Management((34) that current liabilities receive more than passing attention and then it is only in terms of the standard traditional analysis, i.e., ratios--which he distrusts--and the short-run cash budget. Solomon's ideas are discussed in more detail in the next chapter.

Weston (52) and Donaldson (12), among others, stay in more traditional channels, suggesting the use of advanced forms of the cash budget in an attempt to get closer to one aspect of the risk problem--ability to meet financial charges throughout the life of long-term debt. Heretofore, the function of the cash budget was to assist with short-run working-capital management. The cash budget is a primary tool for this purpose, of course, and significant advances are still being made, notably by Park and Gladson (31). Undoubtedly their work will also contribute to the development of long-run cash budgeting.

Donaldson's cash-budget model is worth investigating in more detail because it documents advanced thinking in the traditional vein and because it is incisive and clear, given its intended purpose (12). It is especially strong with regard to the problem of uncertainty in the timing of cash flows and the severity of business downturns. And it is a paragon of organization in handling a multivariate problem.

His "study is concerned with the managerial problem of deciding how far a company should go in financing its capital requirements through long-term debt" (12, p. 1 of abstract). More precisely: "Given the need for new permanent capital and the opportunity to borrow, how does a company approach the determination of the 'wise and proper limit' to such borrowing?" (12, p. 5).

Donaldson's basic analytic objective is to trace the path of the firm's cash balance, after all unavoidable expenditures are made, during the course of a business downturn at some uncertain future date. "We wish to know whether [the cash balance in recession] ever becomes negative and if so, when, by how much, and under what sets of assumptions" (12, p. 182). Knowing this, management may evaluate more or less subjectively the change in the odds of insolvency given a change in debt service charges.

The level of cash flow in a given period is estimated by the standard formula (12, pp. 163-164):

Net cash flow = inflow less outflow

= sales + changes in accounts receivable + other income less (cost of goods produced + selling, general, and administrative expenses + taxes + changes in accounts payable + changes in accrued expenses.)

Cash balances at a given time are estimated in the usual manner by adding the net cash flows for the appropriate series of periods to the cash balance at the beginning of the first period.

The level of cash flows and the cash balance depend on a variety of assumed conditions. Donaldson's assumptions as to what is important are, in fact, the direct source of the uniqueness of his model and, as such, are worth mentioning. The lack of general applicability of his model is the direct result of assumptions as to what is unimportant and these are worth mentioning, too.

The most important assumed conditions are those concerning (1) financial strength, (2) severity of sales decline, and (3) "other determinants," including, among others, collection experience on accounts receivable and inventory levels. The behavior of each of these three factors is evaluated under the assumption that the severity of the sales downturn is the maximum management would expect and also under the alternative assumption that sales reach their most probable (subjectively determined) recession level. In addition, the firm's financial strength at the beginning of the recession is also assumed to be the same as at the time the estimates are made, making a total of three alternative assumed conditions for "financial strength."

The three sets of assumptions for "financial strength" and the two sets of assumptions for "severity of sales decline" and for "other determinants" may all be combined to produce 12 different cash balance figures for a given year (12, p. 195). Management is then able to discern the combinations of circumstances that would have to occur to produce a cash balance at or below zero.

Debt capacity is viewed in the cash-budget manner as a question of the timing of cash outflows and inflows, with attention focused on the net difference between the two in the form of the firm's cash balance.

Although brief, this resume of Donaldson's cash flow analysis indicates beyond doubt that it is comprehensive in that all facets of the firm's operations are reflected directly or indirectly. However, as Donaldson freely admits, comprehensiveness is not necessarily the mark of adequate analysis. The analyst does not tell management to "consider everything": he shows management how to focus attention on the most important variables in a meaningful way. Donaldson says: "Since measurement of risk will take the form of a total cash flow analysis, it is obvious that all debt, outstanding and actively contemplated at the time of the analysis, must be included. As a consequence the question is not which form of debt to include and which to exclude, but rather which is to be taken as 'given' for purposes of the analysis and which is to be taken as subject to possible modifications by management following the conclusion and interpretation of the analysis" (12, p. 9).

Donaldson continues by stating the direction of his emphasis. The study "excludes the short-term financial requirements commonly defined as those having a duration of less than one year and so excludes a category of debt financing concerned with purely seasonal working capital needs" (12, p. 9). In accepting the traditional equivalence of net working capital (CA-CL) and permanent current assets, he then states that "It must be emphasized, however, that [the study] includes the financing of permanent working capital" (12, p. 9).

Demonstrating his complete approval of the traditional theoretical dichotomy between current liabilities and long-term debt, Donaldson says:

> A comment is necessary at this point on what will be called in this study 'spontaneous' credit. This term covers those continuing current liabilities that arise in the normal course of business because of a customary lag of short duration between the incurring of an obligation and the date of cash payment. These are normally described as accounts payable and accruals. While such sources are also of a revolving nature and are often a major continuing source of funds, they are not included in our definition of long-term debt capital. The significant difference between this source and long-term debt is that spontaneous credit is normally subject to gradual and automatic modification in direct relation to the volume of business and profitability whereas the debt with which we will be concerned is negotiated and renegotiated at long intervals and involves relatively sharp and irregular upward adjustments in the obligatory cash outflows. To exclude spontaneous credit from the definition, however, does not mean that its effects are ignored since this is to be a comprehensive cash flow analysis (12, p. 10).

The question of central importance in the context of this paper is: Does Donaldson's choice of emphasis--of variables to isolate--lead to the most meaningful analysis of debt capacity and the best decision criteria for management? The preceding analysis in Chapter IV clearly indicates the substantial use of permanent current liabilities by manufacturing firms. These liabilities are partial substitutes for long-term debt and as such are policy variables. They tend to be readily available and they may be the most risky form of debt financing. They probably have comparatively low costs and their amount may exceed that of all other sources of creditor funds combined.

The principal question, stated more specifically is: does Donaldson's exclusion of permanent current liabilities as a fundamental policy variable limit the usefulness of his analysis of debt capacity? In an analysis which is intended to show management as

precisely as possible the long-run margin of error it has with regard to servicing debt, is it appropriate to net out on a one-for-one basis what may be the most risky or even the only "long-term" source of debt for many firms?

It is probable that the response of managers of small firms which are unable, for cost or other reasons, to float long-term debt would be negative. Donaldson states that he is "dealing with the recession experience of a company which was otherwise 'mature, basically profitable, and apparently well managed'" (12, p. 191). The data in Table 4 suggest that many financial officers in these firms, too, would answer negatively. As one respondent to the mail survey discussed in Chapter II remarked, "We who are engaged in the vulgar trade are not likely to overlook the large sums of available funds which you are investigating."

It would be unduly repetitious to go into detail about deficiencies in the cash-flow approach as structured by Donaldson since most of what has been said before has a bearing on them. Even this advanced form of traditional theory contains many of the defects in the basic traditional debt-capacity analysis discussed earlier. Somewhat the same purpose may be served, in a more positive manner however, by suggesting some of the more important characteristics of an adequate framework for the analysis of debt capacity. The desired characteristics fall into two categories--scope and efficiency. Some of them are shared with similar guidelines set forth in connection with trading on the equity and leverage.

The first set of guidelines has to do with the scope or range of the analysis. Management should be encouraged to evaluate the full range of discretionary possibilities for trading on the equity in

terms of both risk and profit opportunities. Attention should be focused on the aspects of risk discussed in Section 5.3. The technique should permit the measurement of the effects of different mixes of funds within the range of likely future conditions. It should also be suitable for isolating the effects of the use of leverage funds when none were used before as well as the effects of increments to a given degree of trading on the equity.

The second group of guidelines has to do with the efficiency of the analysis. It should require as little re-working as possible given a change in the circumstances of the firm or a change in the debt-structure which is being evaluated.[1] It should be efficient in the sense of applicability to firms of all sizes, industries, and financial conditions. It should be efficient regarding its usefulness in other aspects of financial theory as well as in its ability to synthesize the important ramifications of debt capacity, e.g., profitability and risk.

The theory of debt capacity is thus shown to be a worthy and potentially rewarding area for further study. Fortunately the characteristics outlined above are not as ethereal as they may seem. In fact, with modifications in principles, Donaldson's format probably would be an excellent place to start. Certainly the cash flow/cash balance analysis is an obvious and time-honored approach to debt capacity. As mentioned before, it is adaptable to problems of uncertainty and it handles many variables in clear form, especially if a premium is placed on the use of techniques available to and understandable by most managements.

A substantial improvement would result from simply changing the starting point. Consider first a firm as if it were financed entirely by residual owners. Conceptually the analysis would begin with a group of assets which produce an income stream. The degree of trading on the equity and the effects of leverage and financial risk would be zero while the rate of return would be that reflecting a pure equity financial structure. Cash inflows from sales and other sources would be measured against cash outflow required to replenish assets in the period the assets were actually replaced. From this point it would appear possible to vary the firm's financial structure in an orderly manner, seeking the most desirable combination of income and risk. The mixes of leverage funds and equity which cause the most favorable pattern of net cash flows through successive time periods could be identified.

The use of more abstract analytic techniques may also be brought to bear on the problem of debt capacity. One of them, the capital-budgeting approach, is discussed in the next chapter.

CHAPTER VII

A RE-EVALUATION OF THE ROLE OF CURRENT LIABILITIES: THE LONG-RUN MODEL

7.1 Introduction

This chapter concludes the re-evaluation of the role of current liabilities in financial theory started in Chapter VI. Section 6.1 contains general introductory comments. The long-run model and its components are introduced here. As before, the central proposition is that permanent current liabilities are a long-term source of funds and the objective is to highlight areas which, as a consequence, may deserve further study.

The capital-budgeting approach to financial theory in its wider aspects is an outgrowth of a movement by financial theorists to provide decision criteria for investing in fixed assets which are more objective, more precise, and more comprehensive than those furnished by traditional theory. It is customary to trace the major impetus to this approach to the publication of Joel Dean's Capital Budgeting in 1951 (9).

Since 1951, the original capital-budgeting theory has been modified and expanded to the point at which Solomon, a recognized leader

in the field, chooses to call it The Theory of Financial Management (34). This form of financial theory is divided into three interdependent parts, including capital budgeting, cost of capital, and optimal financial structure. As an analytic technique it departs from traditional methods primarily by its heavy reliance on present values of discounted future cash flows, the equating of marginal costs and marginal revenues, and investor reaction to the firm's policies and circumstances in the form of changes in the current market values of the firm's securities. It is a long-run theory of finance as opposed to a theory of, for example, short-run working capital management.

The capital-budgeting approach has revitalized the academic field of corporation finance. Nothing in this paper is intended to, or could, detract from this fact or from its past and potential contributions to financial theory and management. However, while it has lead away from stereo-typed thinking about long-run financial problems with considerable success, some theorists have transferred to it several ill-suited traditional attitudes toward current-liability financing. Among them are the lack of long-run implications of the continuing use of current liabilities and the equivalence of net working capital and permanent current assets.

No doubt the application of traditional views of short-run finance to the capital-budgeting approach has served a useful purpose by virtue of the simplifications permitted in the development of the new line of theory. Now that the theory is reaching a more mature position, and especially insofar as it is being offered as a theory of financial management in broader concept, the role of permanent current liabilities should be reconsidered.

A reasoned commentary about the choice of assets and liabilities appropriate for primary consideration in an overall long-run theory of financial management is the goal of this chapter. In particular, it will be argued that permanent current assets and permanent current liabilities are more useful groupings of short-term assets and liabilities than those usually encountered in long-run theory. This is true because, when displayed in this manner, their long-run implications are obvious and yet there is no need for explicit analysis of the individual members of these heterogeneous groups. Before discussing the long-run model itself, certain general criteria to guide the selection of assets and liabilities most pertinent to it should be explained.

In Figure 8, page 100, some of the important factors influencing a firm's performance were depicted in a way intended to show the complex nature of their interactions. These factors have vital bearings on the firm's performance at all times. Although the degree of emphasis each receives at a given time depends on the decision at hand, their ability to interact favorably in future years is completely dependent on at least minimal managerial luck in arranging their relationships throughout intervening time periods. For this reason, management and theorists must choose with analytic insight those factors which are to be "given" and those which are to be "variable" in the long run.

The area of responsibility of financial management falls mainly in the lower half of the chart. But even when so limited, this area is so broad and entangled that the development of an overall theory of financial management demands an acute selection process whereby the

number of factors to be considered must be the least which produces determinate answers to the questions the theory seeks to answer.

The literature of finance is replete with criteria to consider when choosing between assets and between liabilities in given phases of financial theory. Some of them are: the life expectancy of one member of a group of assets or liabilities; the unit cost of one member of a group of assets or liabilities; the availability of a liability as a source of funds to a given type of firm or at a given time; the social impact of long-term investment; whether the liability is incurred spontaneously or negotiated; the real or assumed function of the asset or liability; whether the incurrence of the liability is avoidable or unavoidable; and the source of funds for repayment of the liability.

Despite their importance in limited contexts, none of these criteria has more than peripheral relevance to the selection of the general kinds of assets and liabilities to be considered in the framework of an overall financial theory of the firm. As an initial guide to this selection, it is helpful to recall a view of financial theory offered earlier. "The core of financial theory is the study of how business assets and liabilities produce income and risk." These four sets of variables--assets, liabilities, income, and risk--are the sine qua non of any comprehensive financial theory of operational significance.

The principal criteria determining whether specific kinds and amounts of these four variables should be included in the long-run model are: (1) is the amount of the asset liability, or group of assets or liabilities, subject to long-range managerial control; and

(2) is the level of income or risk associated with the asset or liability potentially large enough to influence the long-run performance of the firm? These two criteria operate within the constraint just discussed--the number of variables must be the least which produce determinate answers to the questions the theory seeks to answer.

Prior to selecting the critical variables, the analyst is obliged to state precisely the nature of the questions the theory is to answer. (Obvious as this is, the evidence recorded below would seem to indicate that some analysts have not proceeded accordingly.) Solomon suggests that an overall theory of financial management should answer the following three questions (34, p. 8):

(1) What specific assets should an enterprise acquire?
(2) What total volume of funds should an enterprise commit?
(3) How should the required funds be financed?

His analysis unfolds in three sections common to his school of thought--capital budgeting, the inter-connecting link and central issue of cost of capital, and optimal financial structure. The following comments about the choice of relevant kinds of assets and liabilities are stated in terms of their potential contribution to these three aspects of the theory according to the criteria outlined immediately above. Organization of the presentation is served best by placing the bulk of the argument under capital budgeting and cost of capital, the first two topics discussed.

7.2 Capital Budgeting

The purpose of capital-budgeting theory is to answer Solomon's first question, the one having to do with selecting the specific assets a firm should acquire. Capital budgeting is both a conceptual

framework and a technique; in the present context its role as a conceptual framework is dominant. Several views on the kinds of assets that should be considered in capital-budgeting theory are noted below. They are followed by suggestions for an improved theoretical foundation based on all the foregoing analysis.

Solomon proposes that capital-budgeting theory should evaluate "not only proposals for the acquisition of plants and equipment but all proposals using company funds for existing or new operations, and covering both fixed assets and working capital assets." He also notes that "The extension of a central capital allocation framework to cover the holding and acquisition of working assets such as inventory, accounts receivable, and research programs is still relatively rare" (34, p. 9).

Schwartz follows Solomon in one instance by including "the total assets that must be committed to the project" (33, p. 199) but then adopts a fundamentally different approach several pages later by including only fixed assets and "permanent net working capital" as traditionally defined (33, p. 214).

Johnson takes a practical approach, perhaps because his discussion of capital budgeting is more oriented toward technique than conceptual applicability to an overall theory. "We should include as part of the investment any necessary increases in cash, accounts receivable, and inventory. It will simplify subsequent calculations if we deduct from an increase in current assets any associated increase in non-interest-bearing current liabilities, such as accruals" (22, p. 177).

Weston is a little more casual about stating the kinds of assets to which his capital-budgeting applies. Basically he considers "expenditures whose returns come in beyond a one-year time interval." He qualifites this in a footnote, however, with the observation that "while we will follow the traditional practice of relating capital budgeting to investment in fixed assets, it should be remembered that the techniques discussed are widely applicable" (38, p. 118).

Lindsay and Sametz are not especially clear about the assets they intend to consider in their capital budgeting concepts when discussing technique (26, p. 45). When discussing concepts, however, they take the broad view, stating that decisions on investments in all assets should be made on a qualified marginal revenue/marginal cost basis and with the objective of maximizing market price per share of common stock (26, pp. 33-34). Wessel's discussion of concepts is not so thorough as Lindsay and Sametz' and his technique appears to apply only to capital equipment (37, pp. 272-274).

Guthmann and Dougall say: "When the change (in assets) involves an expansion of operations, any concomitant increase in current asset investment should be included in the investment base upon which a reasonable rate of return must be earned, even though such current assets are not part of the capital budget" (15, p. 113).

A final illustrative approach to the selection of assets comes from Bierman and Smidt. Possibly because their work is somewhat more restricted to decisions about capital budgeting than overall financial theory, they offer a choice of assets to include. The choice is stated clearly in a manner which indicates the relevance of the selection of assets to consider in a capital-budgeting context to the problems of cost of capital and optimal financial structure (1, pp. 137-138).

> "... it was suggested that any increase in non-interest-bearing liabilities should be subtracted from the increase in current assets required, and only the net amount (increase in current assets minus the increase in current liabilities) should be considered a cash outlay in computing the cash flows. This method of handling the non-interest-bearing liabilities leads to the conclusion that such liabilities should not be treated as a source of capital when computing the cost of capital, since the implicit receipt (and disbursement) of funds is left out of the analysis.
>
> If one prefers to include the non-interest-bearing current liabilities as part of the capital structure when computing the cost of capital, then the total current assets required by the investment should be considered as an outlay made in the period during which the liabilities increase. Any change in the capital structure resulting from an increase in current liabilities would then affect the cost of capital."

Within this group of authors there are several distinct ideas about the kinds of assets appropriate to the topic of capital budgeting. They are presented in the form of explicit statements about kinds of assets and vague statements about "investments"; the specific kinds of assets range from only fixed assets to total assets.

This dispersion of ideas is not readily understandable if it is true that these analysts share a more or less common attitude about the function of capital-budgeting theory. Whether or not a particular presentation is oriented toward technique or theory, its function is to provide an analytic framework to guide management in the selection of the firm's most profitable combination of operating assets. It is not sufficient for the firm to earn an "acceptable" rate of return on fixed assets only. This would be true even if the "acceptable" rate were raised by a given amount to allow for related investments in current assets because fixed assets differ with respect to the amount of supporting current assets they require. The relative rates of return would be distorted.

In short, management cannot optimize the rate of return earned by committing its resources to the purchase of capital goods unless the resources devoted to related current assets are included in the investment base. This is the position taken by those of the above analysts who tend to emphasize the long-run aspects of capital budgeting theory. But the position is just as valid in a situation in which specific fixed assets are being selected as of now as it is for planning a firm's optimum asset mix in the long-run. If proper selections are not made in the short-run, there is no reason aside from happenstance to expect an optimum ever would be approached satisfactorily. This should be obvious when it is recalled that any version of capital-budgeting technique must permit selection of long-lived assets and must be concerned, perforce, with the long-run.

Restated in terms of the two criteria listed on pages 115-116 for selecting assets and liabilities in the context of an overall long-run theory of financial management, current assets are selected provisionally on the basis of their contribution to income--firms in few industries being able to earn income without substantial investments in current assets.

The criterion of managerial control--the extent to which management is able to influence its investment in current assets as a long-run policy matter--must also be considered. When viewed in light of this criterion, none of the choices of assets listed above is entirely appropriate.

The point at issue is the existence of relevant analytic differences between temporary and permanent current assets and, in particular,

whether temporary current assets are an appropriate part of the long-run model. The position outlined here is that they are not for four reasons: (1) their long-run amounts and timing are not foreseeable (with sufficient accuracy) given existing forecasting techniques; (2) there is little need to plan for them because management has no alternatives to their use; (3) they are financed by temporary current liabilities which themselves are not long-run policy variables, as discussed in Section 5.2 under the paragraph headed "Financial planning and control"; and (4) temporary current assets and temporary current liabilities may be taken as given in the long-run model, their function being limited to providing flexibility of output within the constraint of planned long-run capacity. In essence, the development of the long-run model of the theory of financial management is furthered by viewing temporary assets and temporary current liabilities together as a given auxiliary system which absorbs the effects of variations in sales which are not specifically predicted.

This viewpoint has two precedents. The first is from the economic theory of the firm. Marshall's successors concentrate on changes in output in the intermediate period and changes in capacity in the long-run. Although no one doubts the ability of output from a given set of assets to fluctuate over the long run, the influence of such fluctuations is not sufficiently pertinent to warrant complicating matters by emphasizing them in the theory of the firm's capacity.

The relevance of this approach to an overall financial theory is supported also by the traditional dichotomy between permanent and temporary current assets. Despite facts that this dichotomy is suggested in a somewhat different context and that permanent current assets are erroneously considered equal to net working capital, the analytic properties of permanent current assets are much the same here as they are in traditional theory. Permanent current assets constitute the pool of working capital associated with fixed assets at levels of output considered to be "basic" or "minimum" in management's judgment.

The crux of the matter is that the choice of assets with which the long-run model of financial theory is concerned depends on the level of output on which the model is based. Several comments on this notion are in order.

Managers, as well as theorists, are obliged to think in generalized terms about the long-run. Regarding asset requirements and output, this means one would expect plans for, say, ten years or more hence to be based on relatively smooth estimates of future production levels. When planning future capacity, some basic level of output would be planned on the basis of estimated demand. Capacity probably would be adjusted upward from that figure to allow for both the inevitable departures of business activity from forecast levels and a margin of safety to protect against the effects of seriously underestimating future demand.

Given a firm's planned capacity, a group of permanent assets with a certain potential output, variations in the level of operations to meet unspecified conditions at a future date are achieved by varying the amounts of temporary current assets used in conjunction with the

given permanent assets. Thus, for each level of planned capacity, there could be any number of levels of current-asset requirements.

Theorists must choose a generalized level of current-asset requirements which is both conceptually defensible and definable in terms of a given level of output within the capacity constraint. Since the planned levels of output most appropriate to a long-run model are the minimum or basic levels, the most appropriate grouping of current assets for analytic purposes is "permanent current assets," defined as in Section 4.5. Perhaps theorists who exclude current assets purchased with short-term debt or at least the non-interest-bearing part of it also have in mind limiting the discussion to permanent current assets. They would be doing so in approximate terms if permanent current assets were actually equal to net working capital as in the traditional view.

Since several recognized academicians advocate including total current assets in their long-run theories, a direct reply is in order even though somewhat repetitive. As a practical matter, permanent current assets may differ little from total or average current assets over the long-run in given firms. However, total or average current assets are not definable satisfactorily in a generalized model of the long-run, unless the firm is assumed to run at capacity, because they vary with all the uncertain temporary changes in output. The analyst lacks a theoretically defensible basis for determining the amount and timing of the investment outlay. One could define total current assets as the amount used at the basic level of output, of course, but in so doing the analytic usefulness of the dichotomy

between permanent and temporary current assets about which most theorists seem to agree is lost.

Nothing above is intended to imply that management should ignore the possibility of future departures from planned output. On the contrary, it is essential that management be fully prepared to make such departures because the need to do so will arise. Normally, however, specific preparations would be made on a short-run basis and in anticipation of specific asset requirements and demand and output levels. As a long-run matter, preparation can be made for meeting exact temporary changes in output only by constructing a long-run model that assures a degree of overall financial strength and flexibility such that the means for acquiring whatever temporary current assets are needed are continuously available. This reliance on general financial strength was discussed in the paragraph headed "Financial planning and control" in Section 5.2. Much of the reasoning there applies to permanent current assets as well as permanent current liabilities and is not repeated here.

7.3 Cost of Capital

The need for precision in selecting the conceptual groups of assets and liabilities to be considered in long-run theory becomes more apparent, though not more important, when the discussion is directed to the topic of cost of capital. Although the discussion here is presented in terms of cost of capital in relation to capital budgeting, most of it applies equally to the topic of optimal financial structure and is not repeated in that section.

"Cost of capital" was described earlier as an inter-connecting link, a central issue, with respect to long-run financial theory. Its

central position is illustrated by its dual role in setting long-run performance goals. These goals are: (1) management should seek an asset mix which earns an amount equal to at least the cost of the use of the funds with which the assets are acquired; and (2) management should seek the combination of sources of funds which costs the least to use. The first goal concerns capital budgeting and the second optimal capital structure. According to Solomon (34, p. 20), when attempting to reach either goal, management must be guided by the overall operating objective of maximizing wealth.

Stating the relationship between these goals in a more illuminating fashion, Solomon says (34, p. 92):

> The advantage of having an optimal financial structure, if such an optimum does exist, is two-fold: it maximizes the value of the company and hence the wealth of its owners; it minimizes the company's cost of capital, which in turn increases its ability to find new wealth-creating opportunities.

This statement also indicates the basic necessity for consistency when selecting assets and liabilities to be considered in the three phases of the long-run theory inasmuch as any phase is incomplete by itself. In more analytic terms, to the extent the three phases are inconsistent with respect to assets and liabilities considered, the ability of the model as a whole to produce determinate results is restricted.

Turning now to cost of capital as it relates to capital budgeting theory, the following propositions are offered:

1. The proper subject matter of capital budgeting theory is the selection of investments in total permanent assets.

2. The investments should be chosen from among those opportunities which offer earnings sufficient to meet the firm's cost of capital.

3. The sources of capital from which the cost of capital, or "cut-off rate of return," is computed should be those which are used to finance the assets in question, i.e., total permanent total assets.

4. The sources of capital from which the cost of capital is computed must also meet the other three criteria for the selection of assets and liabilities appropriate to the long-run model which were listed on pages 215-216. (The compatibility of all these criteria should be obvious.)

5. In view of propositions 1-4, the cost of capital should be computed on the basis of the costs of permanent current liabilities, long-term debt, and net worth.

This position on cost of capital differs from those of other analysts by specifying permanent current liabilities as the "capital" component of short-term debt. Others discuss this topic in terms of: (1) all sources of funds; (2) long-term funds plus interest-bearing short-term debt; and/or (3) long-term funds only. Solomon and Lindsay and Sametz are not clear about their choices. Solomon, for example, refers simply to "debt," which he illustrates with "bonds." Short-term debt receives a traditional treatment in the final pages of the book, as noted earlier. Weston illustrates cost of capital using all three groups of funds with little apparent concern for explicitness (38, pp. 231-237). Bierman and Smidt give their readers the choice quoted on page 219 above.

Guthmann and Dougall, among the most explicit with their choice of total assets in capital budgeting, are concerned just as explicitly with long-term funds only when it comes to cost of capital (15, p. 122). Schwartz includes all sources of funds (33, p. 205). Johnson takes the intermediate position of including only interest-bearing short-term debt (22, pp. 209-210).

There are obvious inconsistencies between some of these choices of sources of funds and the assets selected by the same authors, as described earlier. Instead of stressing this kind of internal inconsistency, the following discussion is limited to support of the position advanced in this paper. Many of the arguments have been made elsewhere and what remains is to marshal them.

Viewed in the most broad and simple terms in a capital budgeting context, cost of capital is the average rate of return management must plan to earn for suppliers of funds in order to justify the use of these funds in the acquisition of the firm's assets. Since there is no disagreement as to the inclusion of long-term debt and equity as "capital," attention is directed to current liabilities.

Permanent current liabilities should be treated as "capital" in the long-run model for the following seven related reasons.

1. They are invested continuously by the firm in operating assets vital to the firm's operations at a given basic long-run level.

2. Differences between their theoretical properties and those of more traditional forms of long-term debt are largely differences in degree rather than kind, as outlined in Chapter V.

3. In addition to providing assets which make substantial contributions to income, their use entails a degree of risk that may equal or exceed that of long-term debt.

4. Since management can substitute long-term debt or equity for permanent current liabilities, it is essential to be able to ascertain the effects on the firm's cost of capital of using amounts of all three so that this cost can be minimized.

5. The conceptualization "permanent current liabilities" makes the theoretical implications of the long-run use of short-term debt more incisive and easier to incorporate in a model of long-run financial theory than would be true of a theoretically equivalent treatment of the individual kinds of short-term debt.

6. If permanent current liabilities are excluded from cost of capital, the capital budgeting model may yield operating results inconsistent with management's wealth maximization objective because of an erroneous "cut-off rate of return."

7. Exlusion of all or part of permanent current liabilities from the computation of cost of capital results in incorrect accept/reject decisions for investment proposals which are evaluated by the present-value method of calculating returns.

The first five reasons need no further support here. Statements six and seven, however, are new to the argument and in a sense are a summary of the most important aspects of the other five. In essence, if permanent current liabilities were excluded from the cost of capital calculation, the figure obtained for the cost of capital would be too high. Permanent current liabilities are not likely to cost even as much as long-term debt due to the large proportion of interest-free debt ordinarily present. Excluding them increases erroneously the influence of high-cost ownership funds on the calculated cost of capital. The consequences of a cost of capital, or cut-off rate of return, which is "too high" are self-evident. Management is let to reject investment opportunities which are in fact sufficiently profitable to earn the return which justifies the use of investors' funds.

It is worthwhile to illustrate the considerable potential magnitude of the effects of excluding permanent current liabilities from capital budgeting decisions such as those that might be made by the manufacturing firms analyzed in this study. The illustrations also highlight the need for consistency in selecting assets and sources of funds for consideration in the theory. The assumed data are intended to be broadly representative of the orders of magnitude often found in manufacturing firms. It is deemed

appropriate to sacrifice a modicum of precision about peripheral matters when so doing permits the argument to flow directly to the points at issue.

Assume a firm has an opportunity to invest in fixed assets which cost $60,000 and which require an associated investment of $40,000 in permanent current assets to support production at the basic future level indicated by management's forecast of product demand. Assume further that management's evaluation of the rates of return which will justify the use of funds are as listed in the data below and that management expects to use these funds in the future in the proportions indicated.

	Source of Funds	Proportion used	X	After-tax Cost (%)	= Weighted Cost (%)
Cost of Capital Computed from Financial Structure	PCL	.25		1.0	.25
	OD	.25		3.0	.75
	NW	.50		10.0	5.00
	Weighted long-run avg. cost of cap.				6.00%
Cost of Capital Computed from Capital Structure	OD	.33		3.0	1.00
	NW	.67		10.0	6.67
	Weighted long-run avg. cost of cap.				7.67%

The investment would be justified if the following annual amounts were "available" to investors after corporate income taxes. (The "Return Required" is stated in terms of present values of average annual amounts and some of the implications of tax deductibility of interest are ignored for simplicity.)

Source of Funds	Amount Invested ($)	Rate of Return (%)	Return Required ($)
PCL	$25,000	1.0%	$ 250
OD	25,000	3.0	750
NW	50,000	10.0	5,000
Total avg. annual return required			$6,000

Return required as per cent of amount invested = 6.00%

It should be clear that management would be furthering its wealth-maximization objective if it accepted this proposal at a rate of return equal to or greater than 6.00% (provided accepting it does not require foregoing a more profitable opportunity).

It should be equally clear that if management set its cost of capital at 7.67%, any profitable opportunities returning between 6.00% and 7.67% would be rejected mistakenly. The 1.67% difference in costs of capital represents a 28% difference in the number of dollars of "required return" which all investment proposals must make "available" to investors to be considered justified. One would expect differences of this magnitude to be important to management as well as theorists, even in a long-run situation with imprecise forecasting techniques.

Consider now the same investment proposal evaluated in a different way by management. Suppose the estimated cost of capital were set at 7.67% and only the $75,000 of funds supplied by long-term investors were considered in the capital budgeting procedure. Then the project would be accepted if the proposal would earn $5,750, enough to justify the use of the long-term funds. But the project would not be operational at basic output levels until $25,000 more were added to permanent assets outside of the control of the rational capital allocation process. If

accepted at this 7.67% return on $75,000, the actual overall rate of return would be reduced to 5.75% ($5,750/$100,000) and the after-tax earnings would be insufficient to "pay" the $6,000 required to justify the use of the investors' funds. The deficiency, of course, is the $250 required to reimburse supplies of permanent current liabilities for furnishing the $25,000 of permanent current assets not included in net working capital.

This example should be recognized as an illustration of some of the conceptual deficiencies resulting from the applicaton of the "pure" traditional attitude toward current liabilities to capital-budgeting theory. Hunt, Williams and Donaldson, for example, deny the long-run implications of current-liability financing, considering only fixed assets plus net working capital on the asset side and long-term debt plus equity as sources of funds (18, pp. 622-624). This selection of assets and liabilities leads directly to the errors illustrated.

What if permanent current liabilities were free in the sense of not requiring interest payments? The cost of capital would then be 5.75%. In this case, if the cut-off rate of return were set at 7.67%, as derived from capital structure only, and if the capital budgeting procedure applied only to the $75,000 of assets acquired with long-term funds on which the 7.67% is based, then the $5,750 annual return would be sufficient to justify the investment.

This last illustration stresses an important fact. If the sources of funds on which the cost of capital is based include all those with explicit costs and if the assets subjected to the capital budgeting process are equal in amount to the sources of funds, the results may then achieve an illusory degree of technical correctness because the

cut-off rate of return may lead to correct accept/reject decisions as in the last example. (Johnson's position, noted in several places above, illustrates this kind of potential technical correctness.) However, the cost of capital so computed is not the firm's "true" cost of capital unless all permanent sources of capital and all permanent assets purchased therewith are included in the capital budgeting process.

This amounts to something more than theoretical hair-splitting. If (1) the expected profitability of investment proposals is computed by the generally accepted present-value method, which discounts future net cash income from the proposal to its present value using the firm's cost of capital as a discount rate, and if (2) the cost of capital figure used is merely technically correct in the above sense rather than theoretically and operationally correct, then (3) the computed present values of all the investment proposals will be in error. Since the exclusion of some or all permanent current liabilities would raise the computed cost of capital above its theoretically and operationally correct level, the result would be that the present value of the net cash inflows from investment proposals evaluated in this manner would be too low. Management would thus be led to reject proposals which in fact should have been expected to repay their "true" costs of capital and which should have been accepted in accordance with the wealth-maximization principle.

Little discussion is needed regarding the approach to this topic which deals in terms of total assets and total sources of funds, differing from the present position by the inclusion of temporary current assets and temporary current liabilities. In addition to all

the explicit and implicit arguments in Section 5.2 and this chapter about the theoretical reasons for excluding temporary assets and liabilities from the model, they should be excluded also because their inherent nature is such that their use probably could not be predicted with sufficient accuracy to permit acceptable calculations of the required rates of return and present values. It is doubtful if their inclusion would enhance the precision of estimates required in the capital budgeting procedure because both the timing and the amounts involved are critical.

Before turning to the last phase of the long-run model, optimal financial structure, it should be acknowledged that this discussion does not include an evaluation of the relationship, if any, between permanent current liabilities and to the controversial proposition advanced by Modigliani and Miller which states that:

> the average cost of capital to any firm is completely independent of its capital structure and is equal to the capitalization rate of a pure equity stream in its risk class (47, pp. 268-269).

Perhaps it is worth noting that Modigliani and Miller discuss the stream of profit from all the assets of the firm but only the long-term sources of funds with which they are financed. And it would be interesting to know if the investor attitude required by the proposition also includes suitable allowances for the effects of permanent current-liability financing on security prices. However, an adequate analysis of their position is viewed as a worthwhile area for future study because it is impractical to devote the required time, space and effort to it here.

For the present it is sufficient to observe that, if a firm's cost of capital were independent of the capital mix as proposed, the

best estimator of it for a given firm would still be based on the expected future costs of its permanent current liabilities, long-term debt, and net worth. If Modigliani and Miller are correct, the use of low-cost permanent current liabilities would induce a compensating upward reaction on the cost of equity funds of the same kind induced by increased use of long-term debt. The conceptual cost of capital probably would not be affected by including permanent current liabilities in the theoretical model. However, an estimate of the cost of capital actually paid by a given firm which is based on the costs of the anticipated future capital mix would be in error if the permanent-current-liability component of the mix were ignored.

7.4 Optimal Financial Structure

A basis can be established readily for the contention that the capital-budgeting and related cost-of-capital phases of the long-run model are relatively new subjects in financial theory. At the same time, one would be hard pressed to refute the proposition that "optimum financial structure" along with certain aspects of cost of capital, is the oldest issue in financial theory, a synthesis of all the foregoing topics, and the subject of universal concern among financial theorists and practitioners. This is undoubtedly true in the sense that a primary objective of study in the field has been and is to answer Solomon's third basic question outlining the scope of financial theory: "How should the funds required be financed?" (34, p. 8).

Moreover, despite the wide variety of techniques, the focal point in all known treatments of optimal financial or capital structure as such is the debt-to-equity ratio and the determination of the "proper" or "optimal" amount of leverage funds to use.

Thus, all that has been said in this paper about the role of current liabilities applies directly or indirectly to the theory of optimal financial structure whether one is talking about the traditional "debt-capacity" analysis, the capital-budgeting model, or a "self-contained" approach to the subject. (The latter, while akin to the general "capital-budgeting" approach in many ways, shares with traditional theory the characteristic of assuming as given a "proper" selection among investment opportunities with varying degrees of profitability. This approach is well represented by Schwartz's notable work (50).)

It is self-evident that if permanent, but not temporary, current assets and current liabilities are appropriate to the capital-budgeting and cost-of-capital phases of the long-run model, there is no alternative but to accord them the same treatment regarding optimal financial structure and there is no reason for doing otherwise. There is one concluding notion, however, that is best offered in the context of optimal financial structure.

Reference to Solomon (34), Schwartz (33), Modigliani and Miller (47), Lindsay and Sametz (26), and others indicates that overall long-run theories ascribe great importance to changes in the market values of securities. It may very well be true that the market price of common stock contains an allowance for the amount of debt used by the firm and that changes in the financial risk accepted by the firm are reflected in the market value of the firm's equity. It may be equally true that

"maximization of common stock values" is the most important guide to achieving optimal financial structure and minimal cost of capital. Perhaps it is theoretically defensible to assert, for example, that some share owners are sensitive to differences in a firm's usage of permanent current liabilities and long term debt and that this sensitivity affects the prices at which all investors are willing to buy, hold, and sell their securities in such a way as to establish the market value of the firm's equity as the proper theoretical focal point.

Whether or not institutional arrangements and investor reactions are in fact such that these theories, or the Modigliani and Miller anti-thesis (47), are true has only limited relevance to the hypothesis of this paper. Although the conceptual improvements established earlier covering the selection of assets and liabilities are emphatically recommended, the most important objective here is to stress the confined scope of these theories as usually presented. Except for capital-budgeting technique, they are directed almost solely to firms with active markets in their securities, a small proportion of business firms indeed. Excluded from this group are all those incorporated and unincorporated firms with closely held ownership interests which rely heavily on current-liability financing for permanent "outside capital." Changes in the market values of these firms and the costs of their sources of funds are veiled at best, especially with respect to the prerequisite interplay between the values of the debt and equity components of the financial structure.

Here is fertile ground for further study. It may be that the key to developing a more general formulation of the theory of optimal

financial structure--one that could bring traditional theory, the long-run model, and practical financial management much closer together--is the development of methods to give more explicit recognition to risk which do not depend so completely on market conditions.

More explicit risk functions, particularly functions which indicate directly to management the operating--as distinct from security market--ramifications of the use of various kinds of permanent debt, would also contribute to more precise analysis of the possibilities for substitution between permanent current liabilities and other sources of funds.

From a managerial viewpoint, it is probably fair to say of any firm which is a net long-run sufferer on account of over-indebtedness, that the market reactions were not intelligible quickly enough. Neither management nor creditors appeared to have sufficient criteria to judge if the direction in which they were moving was toward or away from an optimal financial structure. Even complete acceptance of the extreme position of Modigliani and Miller (47) regarding the inconsequence of the capital structure with respect to cost of capital does not eliminate or even reduce the importance of knowing a firm's capacity to handle charges for all kinds of debt.

7.5 Concluding Remarks

The results and implications of this study are believed to apply to types of business enterprise other than just the manufactruing corporations analyzed statistically. Empirically, manufacturing corporations in general use moderate amounts of current liabilities compared with some other business sectors. Corporations in the construction,

wholesale trade, and retail trade sectors may finance one-third or more of their assets with current liabilities on the average as compared with one-fifth in manufacturing (Table 1).

More to the point, however, the theoretical implications of the study depend in no way on the actual amount of permanent current liabilities used by any particular firm, industry, or sector. If permanent current liabilities are used, or could be used, in a given situation, the theory has a place for them. If they cannot be used, the theory does not suffer but proceeds without them as before. The same can be said of the position of funded debt in traditional theory.

Furthermore, the place provided for the theoretical characteristics of permanent current assets and permanent current liabilities may be an effective connecting link between the financial theory of large corporations and that of small firms as well as between firms using different kinds of assets. A logical connection of this kind is essential to the development of a satisfactory long-run model, or general theory, of financial management. One potential contribution of this paper is that the two conceptualizations offered, permanent current assets and permanent current liabilities, permit inclusive but generalized consideration of the assets and liabilities over which management has long-run control and the income and risk associated with them.

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BIOGRAPHICAL SKETCH

Alvin Blocksom Biscoe, Jr. was born on May 10, 1932 in Lewisburg, Pennsylvania. He attended the first five grades of public school in Lewisburg after which he moved with his parents to Washington, D. C. in 1942. Following a brief stay in Washington, the family moved to Atlanta, Georgia, living there until 1945, and then to Athens, Georgia.

After graduating from Athen's High School in 1948, the author enrolled in the University of Georgia. He was awarded the Bachelor of Arts degree in 1952. From 1952 until 1954 he served in the U. S. Army, 149th Army Band, Salzburg, Austria. On discharge from military service he entered the Graduate School of Business of the University of Chicago and received the MBA degree in 1956. He was then employed as a financial analyst by Standard Oil (N.J.) and Esso Export Corporation, remaining with the latter firm in New York City until 1960.

In 1960 the author became an Instructor of Finance at the University of Florida, Gainesville, Florida. At the end of the 1960-61 academic year he was admitted to the Graduate School of the University. The author completed all requirements for the Ph. D., Economics and Business Administration, in August, 1964 and was appointed an Assistant Professor of Finance at the University of Florida starting in September, 1964. He is married to the former Mary Ellen McMaster.

This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of that committee. It was submitted to the Dean of the College of Business Administration and to the Graduate Council, and was approved as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

December 19, 1964

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